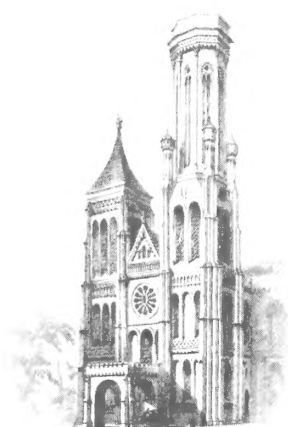


FLORA AND SYLVA

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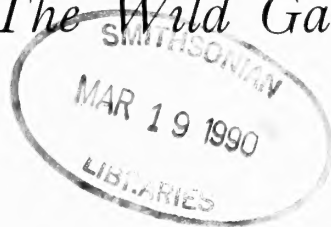
FLORA AND SYLVA.

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FLORA

AND SYLVA.

A Monthly Review for Lovers of Garden, Woodland, Tree or Flower; New and Rare Plants, Trees, Shrubs, and Fruits; the Garden Beautiful, Home Woods, and Home Landscape. Edited by, and Printed and Published for, W. Robinson, Author of "The English Flower Garden," "Alpine Flowers for Gardens," and "The Wild Garden."



VOL. II.

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This volume of FLORA AND SYLVA is dedicated to the memory of
SAMUEL REYNOLDS HOLE, Dean of Rochester.

*Omne vovemus
Hoc tibi; nec tanto careat mihi nomine charta.*

W. R.

Dec. 1904.

“In my garden is an azerolier, which in the Fall is hung with little scarlet berries of the richest lustre. I have given several cuttings from it: far from obtaining pleasure from the privation of others, I strive to scatter and make common the trees and plants which I love; it is to me, as to those who really love flowers for their brilliance, their grace, and their perfume, a multiplication of pleasure, and of the chance of seeing them. They who, on the contrary, are misers of their plants, and who only value them in so far as they are satisfied no one else possesses them, do not love flowers; and rest assured that either accident or poverty has driven them to collect flowers, instead of collecting pictures, gems, or medals, or in a word any other thing which might serve as a pretext for all the joys of possession, heightened by their being owned by no one else.”—ALPHONSE KARR.

FLORA

AND SYLVA.

Vol. II. No. 10.]

JANUARY, 1904.

[Monthly.

ENGLISH NAMES FOR TREES.

LORD ANNESLEY'S lately published book on his collection of trees and shrubs presents us, as so many books have done, with a whole set of Latin names for each tree, no care being taken to give a good English name for any of them, not a difficult task, and, as we hope to show, a useful one. This course is merely following the conventional way of botanists who imagine that all men take the same interest in Latin names and synonyms as they do themselves; whereas the facts are quite the other way—bookmen, on the one hand, used to museums, collections and herbaria, and the vast majority of even educated people on the other, who are interested solely in the beauty and the uses of things, and to whom names in an unknown tongue are of no meaning but usually a source of ridicule. These names may, however, be used in such a way as to be a bar to knowledge, and that is certainly their effect in our country. In France and Germany it is not so: there the best books on garden and woodland work give native names for each tree or plant, which does not in the least preclude the use of the Latin name in its right place. Names are artificial things, adopted merely for con-

venience, and of far less importance than the things to which they refer, as is shown by the fact that many people, as they get on in years, forget names altogether, while retaining a clear memory of things. The multitude of Latin names, where they are unnecessary, means that women and children, and those occupied with outdoor work, are barred by such nomenclature; while, on the other hand, good English names often tell a great deal to simple people, *e.g.*, such names as Servian Spruce and Lebanon Cedar, which at once convey their meaning. As to the science of it, there is no more of science in the use of one language than another. As for the Latin names themselves they are often hideous in structure, and often (so scholars tell us) invented by those whose learning is at fault. There are also numberless false names like *Glyptostrobus* and *Retinospora*—the unfortunate name for the Great Japanese Cypress (*C. obtusa*) which is still kept up in books and lists. If the true Latin names are a bar to us, how much more harmful are these false and needless ones. Then there is the endless multiplication of varieties with cumbrous Latin names, of which we see an outrageous example in the Kew List

of Conifers, pages of which are given to variegated (*i.e.*, diseased) and deformed sports, which are mere garden forms, valueless as trees. If these varieties are kept at all, they are quite unworthy of Latin names. Another evil resulting from this is that the general reader of catalogues and lists take all Latin names as meaning equally good things, until, even in places where the best conditions exist for growing trees, we see distorted and poor forms as often as the true trees, giving a spotty and bad effect to collections, the very opposite of what growers of great trees should expect, and may easily obtain.

Where there is a good English name it should have precedence of all others both for general use, and in books for the garden and woodland. Trees covering vast regions and of great importance, like the Western Hemlock, deserve to be known by their English names, and yet these are oftenest omitted in books and catalogues dealing with them. An Englishman, speaking to English people, should be able to find in his own tongue names for all things to which he need refer. As the Latin names are altered every decade or oftener (Mr. Sargent has now a new Latin name for the Western Hemlock Spruce) there is no keeping pace with the changes rung in their nomenclature. There is no forest tree of Europe, Asia, or America, for which a good English name might not be used, and, once generally adopted, we should have no need to care so much what each succeeding botanist might do in inventing new Latin names or hunting up old ones.

* * *

THE ELIZABETHAN GARDEN.—“The flowers which deck it are for the most part old familiar faces, so long introduced into this country that they are almost like natives; many of them are familiar to our literature, are endeared by pleasing associations, and sanctified by the highest efforts of poetical genius. While they have enough of art to indicate that they pertain to the abode of man and owe their place to his care, they have enough of Nature to lead the mind to the works of the Great Author of Nature. Their subdued colours harmonise with the English climate; and the constant variety of form and colour which each day presents, as the flowers of the mixed border develop themselves, affords a constant source of pleasure and varied enjoyment. We cannot say the same of the modern fashionable garden. Its colours and forms being fixed for the season, there is no further interest in watching its progress, and there are no changes to note; its colours, well adapted to the climates whence the plants are brought are, in this country, glaring, hot, and vulgar, and are rendered still more so by the manner in which an uneducated taste violently contrasts them. They are strangers to us and have no familiar greetings to welcome us; no poet has sung their praises; no peasant has given them a loving and heart-stirring English name. They bloom but for two or three months, leaving the gardens desolate and unwelcome all the rest of the year, and are, therefore, unsuited to the residence of the great majority of Englishmen, who have but one abode, and spend the whole of their lives within it. There is no reason why recently-introduced plants should be excluded from the Elizabethan garden. It would be a ridiculous pedantry to limit its flowers to those only introduced in that period. On the contrary, we would imitate the Elizabethan gardener in this—that we would seek out new plants wherever we could find them. But even if some strict pedant were—like the modern mediævalist in church decorations—to insist that none but plants known at the period should be introduced into the garden, he would find an abundant supply in the old gardening books.” So far we agree with a writer in *Fraser's*, but the introductions of recent years have vastly added to the store of good plants for giving harmonious effect, as well as beauty of the individual bloom. Iris, Lily, Rose (and above all the Tea Rose with its prolonged bloom); Water Lilies in varied and lovely colour, lasting, too, like the Tea and Bengal Roses through the summer, and in some districts into the winter; Clematis also, unknown in great part in the Elizabethan days, as were also the superb Tritoma, the richly-coloured Vines of Japan and America, and many other beautiful and hardy flowers which have come to enrich gardens of the Victorian era.

THE IMPERIAL DAHLIA.

SEEN at its best this is one of the loveliest of autumn plants, but, rarely opening before November, it often fails to flower well or its beauty is cut short by the damp, dark days. This late-flowering habit unfits it for use in the border though it may be grown in the open from June until bad weather sets in, and then taken inside to give it a chance of flowering under glass. Its spreading, deeply-cut leaves make it a fine object in the summer garden, where, if encouraged, it runs up to a great height; it is often better, in view of housing, to restrain its vigour as far as is possible without injury. During November and December this is one of the finest plants in gardens of the Riviera, the effect of the great drooping clusters when many plants are massed in rich soil, being not soon forgotten. But even there it is often difficult to secure the fleshy stems of 8 to 12 feet high from injury during rough wind, which will soon wreck a fine plant. They do best with the shelter of a flanking screen of evergreens, such as Holm Oaks or Arbutus, the deep colour of which throws into relief the vivid green of the Dahlia and its pale flowers. From their habit the full beauty of these drooping clusters is not seen at a distance, but near at hand the crimson eye with its delicate suffusion of pink comes into view upon looking up into the flowers. These clusters are 3 to 4 feet across on well-grown stems, and crowded with flowers. They are fine for indoor use when cut and placed in a tall art vase, upon a pedestal or raised stand suited to their pendant beauty. A group of this Imperial Dahlia, flanked with clumps of Pampas Grasses (which also need shelter from wind), and masses of late-blooming Flame Flowers (*Tritoma*) makes a fine picture in the autumn gardens of the Riviera. By a little contrivance early in the season it is easy to train the then tender stems so as to get a general display of the great white flowers at various heights, for when all are carried at one height the crowns chafe each

other and are too crowded to expand properly, or for the best effect; seen upon a dozen stems of different height the finest display is secured.

Two or three other kinds of giant flowering Dahlias are sometimes grown with our plant, though none of them are better. The Anemone-flowered Dahlia (*arborea*) reaches 8 to 10 feet, and is stouter in growth, and so less liable to injury, with flowers of pale mauve coming later and with a longer season, but they are often spoiled by bad weather while still in bud.



THE IMPERIAL DAHLIA.

Another plant of fine growth and very similar, is *Maximiliana*, but it is not so fine as the Imperial Dahlia. Though smaller in all its parts, *D. Decaisneana* often grows 6 or 7 feet, with small but pretty flowers of rosy-purple with a white base and golden centre in many-flowered clusters, but in grandeur it is not equal to the great Tree Dahlias. Our engraving shows the Imperial Dahlia in flower in a garden of the Riviera.

B.

THE GREATER TREES OF THE
NORTHERN FOREST (No. 10).—
THE TULIP TREE (*Liriodendron*
Tulipifera).

THE lover of trees travelling, for the first time, through the southern part of the United States, could not fail to be struck with the majestic aspect of the Tulip trees, as they lift their heads high above their surroundings in the forests and mountain valleys, where the axe has not yet done its fell work. In the rich alluvial soil of the bottom-lands along the course of the largest rivers of the South; in the deep jungle known as the Dismal Swamp, and like places where tree growth is almost tropical in its luxuriance, they attain their fullest size and beauty. Though the Tulip tree is found as far north as Vermont, and as far west as Arkansas, it is in the States of the middle south that it attains its largest stature. It is seen to great advantage along the valleys of the Kanawha and New rivers in West Virginia, and there are some grand specimens still standing in the Valley of the Shenandoah. The forests of the Wabash Valley in southern Illinois and Indiana are noted for their great Tulip trees, and on the western slopes of the big Smoky Mountains in Tennessee there are noble trees still to be found. But the lumbermen have depopulated our woodlands of these giants of the forest, and it is only in wild regions, far from railroads, that they remain undisturbed. Dr. Ridgway of the Smithsonian Institute at Washington, has called attention to the surprising richness of the forest-flora in the Wabash Valley. South of the mouth

of White River he found that the number of native trees is 107, or more than a quarter of all the trees north of Mexico. The height attained by these Wabash Valley trees is as remarkable as the number of species in the forests. Individuals of forty-two species reach a height of 100 feet, and those of twenty-one species grow to the height of 130 feet. Individual trees 150 feet high of thirteen of these species have been measured. A specimen of *Quercus texana*, the tallest of the Oaks of the Wabash, measured 180 feet; and a Tulip tree was 190 feet in height. A Pecan tree measured 175, a Cottonwood (*Populus monilifera*) 170, a Burr Oak (*Quercus macrocarpa*) 165 feet, while a Liquidambar and a Black Oak attained the height of 160 feet. The size of the trunks of these trees, measured 3 feet from the ground, is in due proportion to their height. Thus a Plane (*Platanus occidentalis*) was $33\frac{1}{3}$ feet in circumference of trunk 3 feet from the ground. A Tulip tree was 25 feet in girth at the same distance from the ground. A White Oak and a Black Walnut each measured 22 feet in circumference, and a Black Oak and Texas Oak were each 20 feet in girth. According to these notes it will be seen that of all the trees mentioned by Dr. Ridgway in these bottom-land forests the Tulip tree was the highest. This is what would most strike the visitor to our southern woodlands, where it sends up its columnar shafts, often unbranched to the height of 20 or 30 feet.

The leaves of the Tulip tree are of peculiar form. They measure 3 to 6

inches in length, are glabrous, and very broadly ovate, often truncate at the apex as well as at the base. They usually have two apical and from two to four

old it loses the rather tame symmetry of its youth. Though the branches of old trees are gnarled and crooked and angular, yet the foliage is disposed upon



GREAT TULIP TREE AT ESHER PLACE. (Engraved for "Flora.")

basal lobes. These lobes have rounded sinuses. The glossy leaves are of a beautiful green colour, changing in the Fall to a good yellow. As the tree becomes

them in a light and graceful manner. The large leaves seem to reflect the light on their smooth surfaces. When one of these grand trees grows in open ground

so that its outlines stand out against the sky it will be seen to have a light and airy effect in spite of its great size and height. The blue sky is visible through many an opening between its limbs, and there is much pleasant flicker of light and shade as the sun strikes on the lower strata of foliage. The leaves move freely on their slender foot-stalks, and are easily set in motion by the wind. They are among the earliest of forest trees to bud, nearly a fortnight earlier than the Oaks of this neighbourhood, which are chiefly Red, Black, and White Oaks. A Tulip tree is a beautiful sight when its leaves are small and tender green, but to see it in its glory one must await its flowering-time late in May. The flowers are solitary and are produced in great abundance and somewhat of the size and shape of Tulips. They are shaded greenish-yellow outside, brightest at the base. Inside they are ringed and splotted with soft yellow and orange. As they stand erect on their stout foot-stalks they do not show their bright markings when seen from below. One would need wings or a balloon to carry him above the tree to obtain the best view of all this beauty.

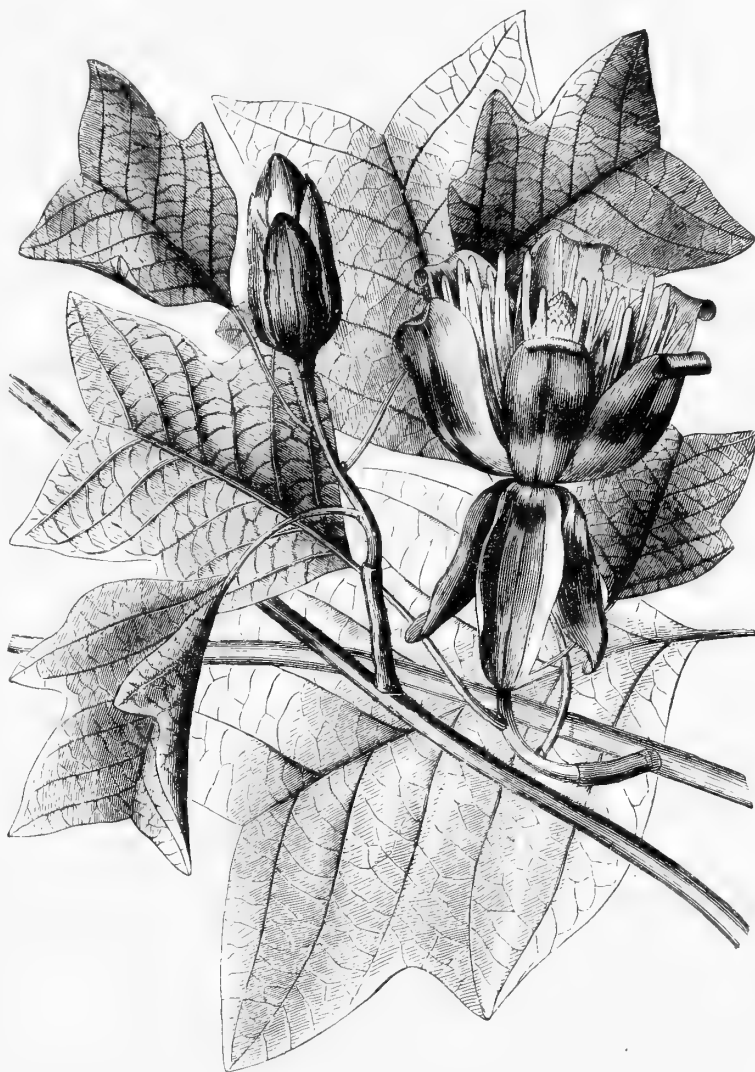
The grove at Rose Brake contains some very old Tulip trees, which, unfortunately, are slowly dying, and which are, we suppose, relics of the primeval forest. No one can tell their age, but it is not probable that they were planted by the hand of man. The largest of these trees has a trunk circumference of 20 feet 4 inches, measured at the height of 3 feet from the ground. It has some small branches that feather down to the ground so that it is an easy matter, in

blooming time, to gather handfuls of its beautiful flowers. These blossoms have a peculiar fresh fragrance, not like the perfume of any flower. It is not sweet, and yet it is pleasant to a lover of the tree. A second tree on low ground at the foot of the Oak Grove here is 14 feet in circumference of trunk, and is 100 feet in height. Its lowest branch forms a junction with the trunk 20 feet from the ground, but on the opposite side the straight shaft rises in the air for fully 30 feet without interruption. The third of the Rose Brake trees, which is 13 feet 5 inches in girth 3 feet from the ground, was struck by lightning several years ago in such a manner that a strip of bark was peeled off the length of its trunk, leaving a broad wound which disclosed the white inner wood. It is dead at the top, and cannot last much longer. The fourth of these giant trees has a curved trunk, caused, probably, by another tree falling across it when it was young. This has obliged it to adopt a line of beauty instead of the rectilinear lines of its sister trees. It cannot be called a crooked tree, as the curved line adds to its grace. At the height of 25 feet from the ground it has nearly righted itself, but has not been able to resist a slight incline to the north-east. The curving shaft is covered with Virginia Creeper, and, with its great size, it is a most imposing object, being 20 feet in circumference 3 feet from the ground. In the Fall when the foliage is all a soft, uniform shade of yellow, and the creeper has turned bright red, running far up the trunk, and clothing some of the upper limbs with its drapery, the old tree is a beautiful sight.

It is fast decaying, and has a large hollow in its trunk in which, some years ago, a wild dog made her lair with a family of puppies, coming out at night to steal our poultry, and hiding so well in the old tree by day that it was long before she was discovered. In a few years it is too probable that not one of these Tulip trees will remain at Rose Brake. The grove here was for many years used as pasture for cattle, and the seedling Tulip trees, self-sown in many parts of it, were all destroyed before they attained any considerable size. For the last few years we have protected a part of the grove, and now we have a copse of young Tulip trees growing rapidly.

As a timber tree this is remarkable beyond all other deciduous trees east of the Rocky Mountains for the straightness, length, and size of its trunk. I have heard of a Tulip tree in the valley of the Maumee, the timber of which squared 48 by 54 inches, and was 60 feet in length. Trees are not uncommon which have 100 feet in length of straight timber. It is therefore not remarkable that the wood of the Tulip tree should be much sought after by lumbermen. At one time it commanded a fancy price, as it was in much demand by coachmakers, who used it for the bodies of their vehicles. It is a very soft and pliable wood, and is easily bent into any required shape. Modern methods of manufacture have simplified

the process of carriage-making, and I am told that other woods are now preferred for the purpose, and that the Whitewood, as it is called by lumbermen, does not now command a very high price, though I believe it is still used to some extent by cabinetmakers,



TULIP TREE LEAF AND FLOWER.

and in the inside finishing of houses. The bark is of a light colour and soft texture, and divided into deep and lattice-like ridges and furrows, much like that of the White Ash. It is now included in the family of the Magnoliaceæ.

Though the seeds of *Tulipifera* germinate freely, young trees are not easy

to transplant. The best plan for growing this tree is to sow the seed where it is wanted, or else to obtain small nursery grown stock that has been frequently transplanted. Trees from the woods are almost sure to die when planted in open ground. The fruit of the Tulip tree is a cone 2 to 3 inches in length. The paddle-shaped seeds are attached to and closely packed around a central spike. It flowers in May in this part of America. Farther north its flowering season is in June, but never so late as July.

DANSKE DANDRIDGE.

Rose Brake, West Virginia, U.S.A.

[Although it may never attain in our country the noble dimensions of those described by Mrs. Dandridge, this is a tree of proved value; and though not planted as a forest tree should be, amongst its fellows in woods, still it attains striking development in many of our country seats, as in the example at Esher Place, of which we give an engraving. The fact that, fully exposed as the trees are, in pleasure grounds and lawns, and with the roots robbed by the grass, they yet attain this size, proves that, planted and grouped in a more natural way, we ought to get an even finer growth. Any free soil suits it, if deep and fresh without being wet. It grows faster than many forest trees, is free from insect pests, beautiful in flower, and excellent as timber. To do well it should be planted young and left to itself, being averse to removal or cutting.—EDITOR.]

“God Almighty first planted a garden; and, indeed, it is the purest of human pleasures; it is the greatest refreshment to the spirits of man, without which buildings and palaces are but gross handiworks.”—FRANCIS, LORD BACON.

EVENING PRIMROSES (ÆNOTHERA).*

AMONG the plants of our gardens some are of doubtful value for effect, however interesting they may be botanically. This is not the case with the Evening Primroses, for amid all hardy plants for the open air there are none of higher value, giving excellent effects when rightly used, while for the most part they are hardy, easy of culture and increase, and good in colour. As to use, they come in very well as groups in the flower-garden, are good where stone edgings are used, and excellent for the mixed border, blooming from June onwards throughout the summer, some of them hardly ever out of bloom, and others flowering a second time in autumn. Their flowers are large and bright, and many of them sweet-scented; seed is borne in quantity upon the tall-growing kinds, but less freely on the prostrate plants. The larger kinds, if a little rough for the border, are beautiful when massed amongst shrubs, or in the wild garden. Nearly all bloom from seed the first year, if sown early.

The American botanists have lately been changing the names, and nearly every species is put in a new genus of its own. Surely there could not be a better reason than this for the retention of a good English name such as we have, in this case, ready to hand. Even the botanists who are guilty of these changes copy the English name. There is plainly no finality in botanical names at all, for each decade witnesses a new set. As though to show this, our old friend the

* With coloured plate from a drawing by H. G. Moon, made at Mr. Perry's Nursery, Winchmore Hill.



CENTAUREA SPECIOSA W&A. POWELL

Evening Primrose is put in a genus new to us, *Onagra*: yet another is *Anagra*; the half-bushy looking kinds are now found under the genus *Knieffia*; the pretty kind of which a variety is figured here is no longer in its old genus but is *Hartmannia*; the well-marked and familiar *Æ. cæspitosa* is now *Pachylophus*; the handsome Missouri Evening Primrose, long known in our gardens, is now *Megapterium*; and so on through the maddest dance of change we have ever noticed among well-known garden plants. There is no group known to us in gardens which is more distinctly marked and closely related than this; and yet they are thus separated into genera as needless as they are confusing.

Amongst many species and seedling varieties of Evening Primrose the following are the most useful kinds for gardens:—

STEMLESS EVENING PRIMROSE (*Æ. cæspitosa*).—A dwarf perennial, 6 to 12 inches high, flowering in May, with blooms 4 to 5 inches across, changing slowly from white to a pale rose; as evening comes on they show well above the jagged leaves and retain their fragrant beauty until morning. Increased by suckers from the roots, and by cuttings, which root readily. Syn. *Æ. marginata*.

DRUMMOND'S EVENING PRIMROSE (*Æ. Drummondii*).—A fine annual, bearing yellow flowers and growing from 18 inches to 2 feet high. A useful kind for filling blanks in the flower garden, and also where annual plants are made a feature. Texas and the south-western States.

SUNDROPS (*Æ. fruticosa*).—This and its varieties are good and showy perennials, 1 to 3 feet high, with bright yellow blossoms. There are several varieties, the best being *Youngi*, about 2 feet high, and with an abundance of flower. It is one of the best of yellow Evening Primroses for small beds, for edgings, or as a groundwork for shrubs, growing freely in ordinary soil and of easy increase by division.

GREY-LEAVED EVENING PRIMROSE (*Æ. glauca*).—A handsome plant of sub-shrubby growth and bearing yellow flowers. The variety *Fraseri* is a still finer plant, and where an attractive mass of yellow is desired through the summer there are few hardy plants of easy culture so effective. Division. Mountain woods in Virginia and Georgia.

LAMARCK'S EVENING PRIMROSE (*Æ. Lamarckiana*).—A tall showy plant growing 3 to 5 feet high, and of the highest value for the garden, especially the wild-garden, and to go with such plants as the Foxglove and Mullein. It is a biennial, seeding freely, and should be sown yearly, especially in recently broken ground. In books it is usually classed as a form of *Æ. biennis*, but is distinct from our point of view, and superior, the supposed mother-plant not being worth growing. It is called after a famous naturalist to whom we are indebted for some of the best ideas in the "evolutionary" notions of our day. Prairies and mountains.

MISSOURI EVENING PRIMROSE (*Æ. missouriensis*).—A handsome perennial, with prostrate stems and clear yellow flowers, each sometimes 5 inches across. There is no more valuable border or rock-plant, being easily grown and increased from seed or cuttings. The blooms open in the evening. Syn. *Æ. macrocarpa*. Central Prairie regions.

ROCK EVENING PRIMROSE (*Æ. pumila*).—The most graceful kind, and, though bearing a small flower, it is a charming plant for the rock-garden or for stone or other edgings, yielding a succession of bloom throughout the summer and autumn. It is a perennial, and not difficult to grow or increase. Syn. *Æ. riparia*.

SHOWY EVENING PRIMROSE (*Æ. speciosa*).—A first-rate perennial with many large flowers, at first white but changing to rose; the plant erect, and 14 to 18 inches high, is increased by division or cuttings and thrives in well-drained loam. Canada, southward and westward. The subject of our plate is a beautiful variety of this species, a plant of fine colour and not often seen in gardens. It is certainly one of the finest of the Evening Primroses, forming a trailing mass of much-branched slender stems, bearing flowers of a bright clear rose with darker lines, and 1 to 1½ inches across. It spreads rapidly into masses a yard or more across. It is fond of a sunny spot and light

sandy soil (or leaf mould) with plenty of stones both buried and lying on the surface, and is easily increased by cuttings or by division of the roots.

CHILIAN EVENING PRIMROSE (*Æ. taraxicifolia*).—A trailing plant of biennial duration, with beautiful white flowers changing to a soft pink. On a moist, warm summer's evening they are 5 inches across and visible on the darkest night. Increased from seed, flowering well the first year, and most enduring on warm soils. Syn. *Æ. acaulis*; a less beautiful plant is also known by this name. * * *

A MARSH GARDEN.

As stereotyped plans are a source of the greatest evil to garden design, so the essence and heart of good and artistic work lies in taking advantage of natural conditions and situations, of which we have an interesting example at Castle Sanderson, Fermanagh, described in *The Field* last week. There need be no doubt that, considering the great area of marsh and bog land in our countries, picturesque gardens of the most interesting and varied nature could be made therein at slight expense beyond that of procuring the plants. The groundwork and the heavy expense of garden-making is in that way avoided. It is such a gain to find the soil, water, and other conditions needed ready at hand, and the only thing then necessary is the thought of the vast number of plants of the highest beauty that thrive naturally in such ground. We remember in America seeing a dwarf Magnolia (*M. glauca*) beautiful in wet bogs; certain kinds of Azalea, Andromeda, Huckleberry, and other shrubs are quite as much at home there. The Eastern States of North America and the Canadas are rich in lovely bog-plants, including Orchids of great beauty and

perfect hardiness. Even in our own more limited flora we see lovely things in such ground, and over the vast range of European mountains many Primroses attain their highest beauty in bogs and nowhere else, including our own Bird's Eye Primrose. Then, again, the dwarf and trailing mountain shrubs, often of great beauty, are happy in boggy haunts, as are also the northern Pines and Junipers. The following lines give some account of what has been done to turn to account a piece of natural bogland, transforming it from an ugly marsh into a spot of beauty: "It is simply about three acres of a natural bog, sparsely wooded with Birch, and sheltered by Pines and Spruce; some parts have been partly drained, and the whole turned into a garden of beautiful and interesting plants. Canals have been cut or deepened so as to allow great masses of spongy peat-earth to stand clear of the water, and walks with crossings over log bridges lead one all over the enclosure. The bog garden is quite near—say five minutes' walk from—the house, and I shall never forget the colour and variety of vegetation that flashed upon me on a sunny afternoon in October, when I saw the place for the first time. The colour of autumnal foliage and flowers, bright as it was, became intensified by the background, and by the low cliffs of black peat rising here and there out of chocolate-coloured water. The rich hues and dark tones of the peat lost nothing by contrast with glistening stems and trunks of Silver Birch, and by the gleam of blue-leaved Pines. To see this unique garden in April or May must be delightful, when it is a fairy land full

of Japanese and American Azaleas ; even as I saw it in rainy October between the showers it was rich and full of colour. The Azaleas were dying off, and their leaves were amber and russet or purple crimson and gold. Here and there feathery grasses and sedges contrasted with the dark peat and the water, and Sumach and Pyrus lit up the place with colour. Osmunda and other Ferns nestled at the water's edge, and in other places were carpets of the most exquisite Sphagnum Moss, with rainbow colouring from yellow to green, and from green to ruby red or crimson. In one place the North American Pitcher plants (*Sarracenia*) and Shortia, with its crumpled and painted foliage, seemed quite at home. The one thing that struck me as peculiar was that such a wide range of plant life

should have prospered so well in pure peat-earth, however well drained. On one little hillock was a gnarled old specimen of the Chinese Juniper, with its young foliage nearly as blue as a Forget-me-not, and the bush could not have looked more vigorous on the chalk hills of Surrey or Kent, where our native Juniper grows so freely. It was quite a novel experience to walk up and down dry and spongy walks of peat as soft as

Persian rugs, and see such a wonderful variety of form and colour spread out before one's eyes. * * *

BEAUMONTIA GRANDIFLORA.

AMID all the floral splendour of the tropics few plants are more remarkable than this fine climber, brought many years ago from northern India. As a new plant it was for awhile much grown, but has become rare, and is now not often seen in gardens, spite of its great beauty and comparative ease of culture. One cause of its neglect is that it needs a large space, and to bloom well must have a sunny place under a glass roof, where its massive leaves throw



FLOWERING SPRAY OF BEAUMONTIA. (Much reduced.)

such shade over the rest of the house as to spoil it for many other things. Yet the splendour of its pure white flowers, borne in lavish profusion in spring, goes far to atone for this exaction. Being a strong grower it does not succeed in pots, but should be planted out in a Temperate house in a mixture of good fibrous loam and peat made porous with coarse sand, and in a light and airy position. Unless so placed it does not bloom freely. Its evergreen leaves are about 8 inches long and 3 wide, with a smooth, shining, upper surface, downy beneath, with ruddy hairs upon the veins, midribs, and young growths. The bell-shaped flowers of pure

white are very fragrant, 4 or 5 inches long, and carried in drooping clusters at the end of every shoot and from the axils of the leaves; a fine mature plant will bear as many as 200 of these clusters, some of which contain forty or fifty flowers. They open from the end of March, throughout April, and when they fade the plant should be well cut back to induce new growth, which flowers in its turn in the following spring. There are few details of importance in its culture beyond the cleaning and syringing common to stove plants; it is well, however, to train the shoots as widely as space will allow, so as to be sure of well-ripened tissues. Cuttings are easily rooted in sand and bottom heat, and from the third year bloom freely, forming plants beautiful as they are rare. Travellers familiar with the luxuriance of South American and Indian gardens say that few things in Nature are more imposing than mature plants of *Beaumontia*.

THE TURPENTINE FORESTS.—The tree from which turpentine is obtained is the long-leaved Pine (*P. palustris*). This tree is common in some of the southern United States, but is found only where the original forest has never been felled. When once cut down it never grows again. If the land is allowed to fall out of cultivation it is followed by a growth of Oak, and this in turn by Pines of an inferior kind. The Turpentine Pine is tall and straight, from 3 to 5 feet in diameter to a height of 40 or 50 feet. It is without branches except at the top. The turpentine in its crude state is obtained by tapping. About a foot from the ground and parallel with it an incision is made 6 or 8 inches deep, forming a ledge or shelf. In the shelf a pocket is scooped large enough to hold a quart or two of sap, which is made to collect in it by scarifying the bark triangularly, with an angle pointing to the pocket. On large trees three or even four of these cuttings are made, for a strip of bark 3 inches wide between them will keep the tree alive. Each year more and more of the bark has to be removed, but even then a tree lasts usually from fifteen to twenty years. When the pocket has run full, the gum is collected and carried away to be distilled. The turpentine continues of uniform quality throughout the life of a tree, but the resin, which is the residuum after distillation, rapidly deteriorates. The first year's resin is far the best, and is known as "pale" or "window glass." That of the second and third years is known as "yellow dip." Common or dark resin is the product of trees worked for four years or more. The work is done by negroes, one man taking charge of 10,000 pockets, which will yield about 200 barrels of crude turpentine in a season.

THE GARDEN BEAUTIFUL. HOME LANDSCAPE AND HOME WOODS. WHAT TO DO WITH IRON FENCING.

WHEN our eyes are opened to the ugliness, cost, and danger of iron fencing the question arises as to how it can be turned to account in other ways. The danger of wire fencing round pasture fields is the most evident, and its ugliness appalling in the foreground of fair landscapes, where it is far too common. Live fences do away with the need of it in either case, but as there are miles of it in most districts to be got rid of, the turning of it to some good use is desirable, and the best use for it that I know is the protection of choice young plantations in woods. Most of our country is so infested with ground game that planting becomes almost impossible unless we protect with wire. It is bad enough to lose Scotch Fir, Larch, and the commoner trees, after having had the trouble and cost of planting them, but when it is a question of the rarer and choicer trees, which are difficult to procure, then we ought to protect thoroughly until they are large enough to take care of themselves, which cannot be before seven years' growth. For common trees we may do what is needed with wire only, but there is the danger that with heavy snow it may be jumped by rabbits (or broken down by stock, gamekeepers, and others) and so fail us at a critical time. In choice planting the best way is to surround our plantations with spare iron fencing, and then wire. As we often suppose our own plans to be the best, I may say that I am myself doing this with a large quantity of

iron fencing which became a danger round pasture fields. (The iron fences along drives or in the foreground of good prospects I have long ago done away with.) The most difficult spots to plant are in old woods, often of underwood having ceased to be of any use or profit. Planting choice little trees in such woods is out of the question, so I have just fenced with iron an acre of such woodland which had nothing left in it but stubs and a few Birch and other trees of little value. The iron fence is to be wired $3\frac{1}{2}$ feet high, and within is to be a plantation of the Western Hemlock Spruce (*Abies Mertensiana*)—a noble tree that suits our country well—and with it a sprinkling of Japanese Larch. This iron fencing is so placed as to be hardly visible from the rides near; it gives safety from animals and other interlopers, and makes sure of my trees while they need protection.

In another wood I have enclosed about two acres of ground and wired it well to the top of the iron fence (as it was a badly infested place), and that is now being planted with young trees of the Atlantic Cedar with a sprinkling of the Numidian Spruce and the common English Yew. These three trees I saw growing together on the top of a mountain in Algeria, perfectly happy in company, and with heaps of snow around them; this on the 3rd of May. Another patch, where Oak failed owing to unsuitable rocky soil, is to be fenced and wired in the same safe and permanent way for the Spruces of the Rocky Mountains, and so in this way use is made of what is too often an eyesore and a danger. The association in bold plant-

ing of trees that grow together in nature cannot fail to be right in all ways. Wiring against wooden stakes is not nearly so effective as wired iron fencing, but is efficient if well done, and for common trees.

* * *

A PARADISE OF FERNS. THE FILMY FERNS IN JAMAICA.

JAMAICA is a hilly, or rather, mountainous island. There is very little level ground, even along the sea-coast. Everywhere the land begins to rise almost at once, gradually ascending to the heights of the central chain of hills, which, in the Blue Mountains, attain an elevation of more than 7,000 feet. There is thus great variety of temperature and climate. In the lowlands, the mean temperature is about 75 degrees at night, and about 85 degrees during the day, but the heat is tempered by both land and sea breezes. At Newcastle (3,800 feet), the mean temperature of the hottest month (July) is 68 degrees, and of the coolest month (January) 61 degrees. As you ascend still higher the mean temperature, of course, proportionately falls, till you gain the summit of the Blue Mountains, where frost has been occasionally, but rarely, registered. A large part of the surface of the island is therefore free from the excessive tropical heat under which the great majority of Ferns cannot luxuriate. But Ferns demand something more than moderately cool temperature, they must have both shade and moisture. Shade they receive in abundance from the bush or scrub—one can hardly call it forest—that clothes the hillsides, and is generally dense enough to screen them from the direct rays of the sun. There is no lack of moisture either. Streams everywhere run down from the upper regions to the sea, more than one hundred of them in all. Then from these streams, and from the ocean, the heat of the sun raises copious vapours, which produce, as they ascend, clouds saturated with moisture, and these, coming into contact with the colder strata of air aloft, are condensed, and fall on the hills in frequent and heavy showers, sometimes in torrents. It will be well, as bearing closely on the subject in hand, to give some idea of what the rainfall is.

I will take the year from April 1895 to March 1896, as being the year which covers my residence in the island. At Kingston, near the sea-level, the rainfall was 22·3 inches; at the Hope Botanic Garden, at an elevation of 600 feet, it was 50·98 inches; at the Castleton Botanic Garden, nearly the same altitude, it was 108·88 inches; at the Hill Gardens, which lie 4,900 feet above the sea, it was 122·45 inches; and on the Blue Mountain peak, at a height of 7,423 feet, it was 176·86 inches. And though some months are very much more rainy than others, there was no month in which the rainfall, at least on the higher grounds, was not considerable. It would seem, then, that Jamaica possesses all the requisites necessary for the luxuriant growth of such a plant as the Fern—shade, moisture, and a temperature which varies at different elevations from heat to comparative coolness. A fitter home for this particular class of plants could not be conceived.

But, as a matter of fact, are Ferns found there in such numbers and variety as to warrant us in regarding their abundance as something phenomenal? Let us institute a comparison between Jamaica and the British Isles. But observe, first of all, that the area of Jamaica is only about 4,000 square miles, a little less, *i.e.*, than the area of Inverness-shire, including in the county the islands that form part of it. Now in the whole of the British Isles there are, according to the last edition of the *London Catalogue*, only twenty genera of Ferns, containing forty-seven species, and of these genera, eleven have only one species apiece. In Jamaica, on the other hand, there are, according to the most recent authority, Mr. Jenman, of Demerara, no fewer than forty-five genera, with 473 species—all within that small area, about equal in size to Inverness-shire—more than ten times as many as occur in the whole of Great Britain and Ireland. Many of the genera, too, are very rich in species. The genus *Cyathea* has sixteen species, *Pteris* has twenty, *Hymenophyllum* has twenty-three, *Trichomanes* has twenty-five, *Adiantum* has twenty-seven, *Acrostichum* has thirty-three, *Nephrodium* has fifty-six, *Asplenium* has fifty-eight, and *Polypodium* has seventy-nine, *i.e.*, the *Polypodia* alone are more than twice as many as all our species taken together.

There is one class of Ferns that has a special attraction for a botanist in Jamaica, and

which he can never sufficiently admire for their great delicacy and beauty,—I mean those that gounder the general name of filmy Ferns, because of the film-like translucency of their structure. They occur in greatest profusion at a height of from 5,000 to 6,000 feet. Below that altitude you will find more species of *Trichomanes* than of *Hymenophyllum*, the latter, with the exception of *H. polyanthos* and one or two others, almost all growing at least above 4,000 feet, whereas *T. punctatum*, *T. sphenoides*, *T. Krausii*, *T. sinuosum*, *T. Bancrofti*, *T. scandens*, *T. radicans*, and *T. rigidum* can all be found at comparatively low elevations, their range extending, however, in most cases far up the mountain sides. The happy hunting-ground for the filmies is then from 5,000 feet right up to the summits of the hills, amid the forests which cover much of the mountain surface of Jamaica. The atmosphere among the trees is close and muggy. The soil under our feet and the tree-trunks around us are saturated with moisture—moisture which never dries up, for the damp vapours at that height are always wrapping the hills in their folds, and the direct rays of the sun cannot penetrate. In such a spot it is not to the ground, but to the trees, to the trunks and the branches, that you look for the filmies you have come to seek. For one growing on the ground there are a hundred on the trees. On the wet surface of the cracked and fissured bark the Fern spores find an ideal place to germinate. The stems of some of the Tree-Ferns, in particular, being clothed with aërial rootlets, or covered with a rough draffiness, form the very kind of home that the tender filmies love to dwell in. Let us look about us, then, and see what there is to reward us for coming all the way from Scotland into this strange, far-off, solitary place, where the whistle of the steam engine has never been heard, and Nature reigns alone, as she has done from the creation of the world. Here, on this Fern-stem, is a mass of dark-green *Trichomanes trichoideum*, surely the daintiest plant that grows, the delicate fronds rising from its thread-like, creeping root-stock, and cut into segments fine as hairs, bearing the diminutive fructification, which is yet perfect in all its parts—cup, sori, and protruding seta. To find this gem of a plant alone, in all the ideal grace of its fairy-like fronds, is recompense enough for the expendi-

ture of much time and trouble. But there are other things quite as good in their way. Here, for instance, is *Hymenophyllum asplenoides*, hanging down by its hair-like stem from the horizontal bough of a tree, with its narrow, tapering fronds, 6 or 7 inches long, bright green and transparent, beautiful both in colour and in form. And here, too, growing in a similar position, is another very fine filmy of a peculiar brownish grey colour, forming a great mass of narrow, pendent fronds, 18 inches or more in length, and covered all over with a woolly hairiness. It is *H. sericeum*, a Fern that has a character of its own, and can be mistaken for no other. I believe it is very difficult to cultivate in this country, its dense woolliness rendering it very liable to damp off. Among filmies of this elegant, tapering, pendent type of frond may be mentioned here *Trichomanes sinuosum*, though it does not grow at this altitude, and does not seem to be very common in Jamaica at all. I found it in fine form near the Grand Etang, in Grenada. In my specimens, the frond, exclusive of the short stem, reaches to 10 inches. It has something of the look of *Hymenophyllum asplenoides*, but the lobes are much sharper. It is very thin in the texture, and of a fine pale green colour. It is partial to the trunks of Tree-Ferns, and seems, as Mr. Jenman notes, to prefer *Cyathea elegans*, which has a stem covered with prickles and fibres, affording the creeping rootstock the hold and the nourishment it requires. *Trichomanes scandens*, again, though its fronds also hang down, has not the slender footstalk of those others; it is much stiffer and stronger, and the multified fronds, a foot long, are firmer in texture, so that they merely droop, instead of being completely pendent. The colour is a golden green, and it is very beautiful as it is seen climbing up the trunk of a Tree-Fern, the fronds standing out at regular intervals. Like the last, it prefers a lower elevation, and is mostly, if not always, found on the same *Cyathea elegans*. I will only glance at one or two of the smaller species, as an enumeration and description of each of them would be tedious to those who have not seen them growing in their native home, however much one might like to linger over them, and recall the scenes in which they were first observed. Among the small ones there that grow at a height of 5,000 feet, one is sure to

notice *Hymenophyllum lanatum*, a tiny thing, with tender pendent fronds about an inch long, which are clothed with soft hairs, and lie imbricated over one another in close patches, which are often very large. It is of a brownish grey colour, like that of *H. sericeum*, and the individual fronds are in shape like the feathers drawn from a small bird's breast. The only other it could be confounded with is *H. hirsutum*, which has also little pendent fronds forming large patches, but they are longer, of a different colour, and more divided. But none of the small ones surpass *H. elegantissimum* in beauty, with its very narrow, slightly divided fronds and wavy margins. It is a perfect gem; but I must allow the dried specimens to speak for themselves, although fronds separated for drying cannot give an idea of the beauty of a mass of it with every frond hanging down distinct. I must pass over, merely naming them—*H. fucoides*, *H. polyanthos*, one of the most abundant everywhere in the island above 1,500 feet; *H. clavatum*, *H. axillare*, *H. lineare*, and *H. hirtellum*. With regard to *H. ciliatum*, which is frequent in Jamaica, I found on the Soufrière, in St. Vincent, a Fern which answers very closely to the description of *H. ciliatum*, but differs so greatly in size as to be entitled to rank at least as a distinct variety. The fronds of the Jamaican *H. ciliatum* are stated by Mr. Jenman to have a length of from 1½ to 3½ inches, whereas my Soufrière form attains a length of from 6 to 10 inches, and was found growing, not only on logs, but also on the ground. There did not seem to be anything special in the nature of the habitat to account for this great increase of size. This St. Vincent plant was quite the most beautiful of the larger Hymenophyllums I saw in the West Indies. We were fortunate in finding, in the short time at our disposal, fourteen out of twenty-three species of Hymenophyllums that occur in Jamaica; two of the others have been only once found, and there remain only seven, which are not rare, and would probably have been found by us had our opportunities been greater.

A class of plants so tender and beautiful as the tropical Filmy Ferns have naturally attracted fern-growers in this country, but the cultivation of them has been attended with only partial success. One great difficulty has been to obtain healthy and vigorous plants at

the outset. They may be sent over in Wardian cases, but then they require to be looked after on the voyage by someone who understands how to manage them; and even then a Wardian case is a bulky and brittle article. If they are packed in a tin box in the ordinary way, it is exceedingly difficult to strike the happy medium between packing them too wet and packing them too dry; and they reach this country either shrivelled up for lack of moisture or blackened by damp, so that only a very small percentage of the plants despatched from the West Indies are fit for growing. But even if you have good plants to start with, it is by no means easy to copy the conditions under which they grow in their native climate. You must give them a warm, moist atmosphere, and not too much light; but the atmosphere ought not to be stagnant; and the tender kinds may very easily be kept too warm and too moist. They are very apt to rot with damp, especially the hairy species like *Hymenophyllum lanatum* and *H. sericeum*, or you may be just able to keep them alive, without their ever striking away into vigorous growth.

If time were of no account one would like, in speaking of the Ferns of the high woods of Jamaica, to mention some of the interesting little Polypodiums which grow in positions exactly similar to those of the Filmy Ferns, dependent from the trunks or boughs of trees. As I have said, the genus *Polypodium* is a very large one in Jamaica, consisting of seventy-nine species, more than fifty of which grow on trees. Some of the largest ones, as, *P. chnoodes*, are very beautiful plants, but to me the most interesting were the smaller ones, growing at a high altitude. I have already mentioned the curious *Xiphopteris serrulatum*, which is really a Polypodium, though the *sori* ultimately run into one another and form a continuous line. Then there are *P. gramineum*, *P. marginellum*, *P. trichomanoides*, *P. basi-attenuatum*, *P. moniliforme*, the beautifully soft, golden brown *P. cultratum*, *P. suspensum*, *P. piloselloides*, and *P. lanceolatum*. Most of these could probably be made to grow in this country alongside of the filmies, but, perhaps, they would be even more liable to damp off, and would require a compartment to themselves.

Of the general Fern flora of Jamaica, of its various kinds of Tree-Ferns, of its numerous

species of *Adiantum*, *Pteris*, *Asplenium*, *Nephrodium*, *Acrostichum*, which abound in every moist and shady locality, or of the many curious genera that are represented by one species or by a very few, I will say nothing at present, beyond making the general remark that it is amazing to see how freely a large number of the species are distributed, and the immense number of the individual plants. It has been said that within a radius of one hundred yards you may, in some places, gather specimens of fifty different species. At any rate, one is greatly struck with the prodigality with which they are scattered wherever Ferns will grow—in woods, on shady banks, among rocks, and by streams. The Ferns are undoubtedly the features of an island which is luxuriant in all manner of vegetation. Even the casual tourist, who does not know one Fern from another, is struck by their multitude and their diversity.—Dr. DAVID PAUL in Address to Botanical Society of Edinburgh.

KASHMIR: A LAND OF FLOWERS.—We drove through pleasant groves of Chestnuts, Walnuts, Peaches, Pears, Cherries, Mulberries, and Apples, all of which are indigenous to this favoured land, while the Wild Vines hung in festoons from the branches. The fresh grass beneath the trees is spangled with flowers—great terra-cotta coloured Lilies, Iris of many shades, and others—while Hawthorn bushes in full blossom emulated the whiteness of the snows above. Forests of Deodar crowned the cliffs, with lawn-like expanses below. Sparkling cascades dashed over many a high precipice. It is a land of running water, of fruit, and flowers, and birds, and sweet odours. The houses are of many stories, most of them richly ornamented with carved wood, while the sloping roofs of nearly all are overgrown with verdure. The dome of one Hindoo temple was covered with long grass, thickly studded with scarlet Poppies and yellow Mustard. Mulberry Trees with Vines winding about them find room to grow between the houses, producing a very pretty effect. Whenever we came across waste land it was covered with the blue Iris, which is spread all over the country, and is so deep-rooted as to render the reclamation of the soil difficult. However, it is a favourite food with the sheep, and is dried and stacked for winter fodder. A larger variety of purple and white Iris is often seen growing in isolated clumps, not spreading for great distances like the commoner small, blue species. Each of these clumps represents a Musulman burial-place, it being the custom of the Kashmir followers of the Prophet to plant this beautiful flower above their dead.—KNIGHT, "Where Three Empires meet."

FOREST TREES OF THE ALPS OF EUROPE.

AFTER our own native trees—the best of all for use and beauty—should come first in our thoughts those trees of cool and neighbouring regions which thrive in a temperature some-

Alps of Europe. Though their greatest areas are fiercely arid, there are immense forests on their flanks and in the valleys, and even far up the mountain slopes; and the floor of these forests are strewn with flowers and delicate trailing shrubs, Wild Strawberries, and even Gentians. But where the trees abound, as they



A PINE FOREST ON THE ALPS OF EUROPE.

thing like that of our own country. First among these are the trees of the European Alps, not merely those of the north, but also of the slopes that go down towards the great sea, crested by the Cedar as well as the Pine. Every great alpine range in the world has much forest beauty, and certainly there is no lack of it in the

often do, they take the palm for beauty and interest to tree lovers, and this beauty can never be lost to us because of the vastness of those crowded areas. On the flanks of the Tyrolese valleys and many other alpine regions, the walls of rock are so steep and high, and cold, that no other use could ever be made of them. There

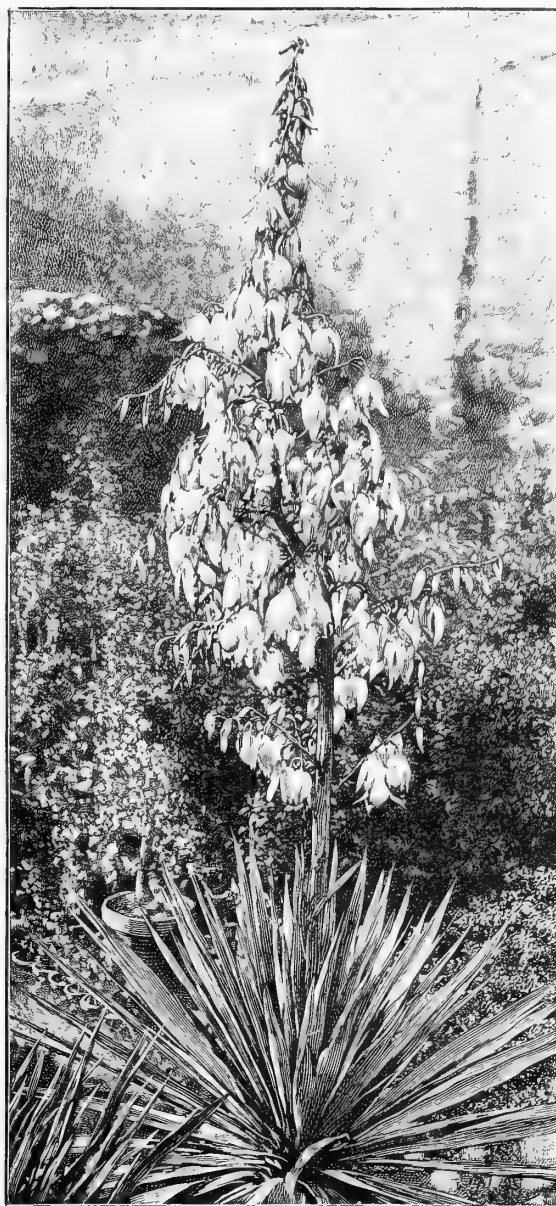
are hundreds of miles of mountain-side in these regions where one can hardly stand with any ease on the steep mountain slope, and yet there are legions of lovely trees everywhere, often grouped on lawn-like openings and beside the streams with a beauty that no human grouping of trees can rival. On quitting the lower slopes of the mountains the traveller, as he ascends, leaves behind him the summer-leaving trees and enters the region of the Pines. These, in many places, form immense forests stretching up the mountain sides to a height of 7,000 to 8,000 feet above sea-level. One of the commonest in nearly every part of the Alps is the Spruce Fir, sometimes mingled with the Larch. It is seen in its greatest beauty on the limestone zone, which extends along the northern side of the Alps from Savoy to the Tyrol. The Larch has a higher range than the Spruce, growing up to about 6,000 feet, and in some parts, such as the Engadine, as far as 6,700 feet. Speaking generally, the zone of Larch forests extends from 4,000 to 7,000 feet. Noble trees are often met with in the woods, rising to a height of 100 to 120 feet, with a diameter, measured about a yard from the ground, of 4 or 5 feet. The Silver Fir is less frequent but is common in the Jura and in parts of the Engadine and Southern Tyrol, and rarer in the Western Alps. In the Jura it reaches a height of 5,000 feet, but in the Engadine has a lower range. On the Pennine Chain it has been found up to about 6,200 feet. The Scotch Fir is abundant, growing up to about 6,000 feet, but it is rare in the French, Piedmontese, and Swiss Alps, where it seems to be generally confined to the lower land. In the southern Tyrol it is more abundant, and extends to a considerable height above the sea, perhaps not less than 5,000 feet. The last of the Alpine forest Pines is the Swiss Pine—one of the most beautiful of them all; in some districts abundant, chiefly on the Frela above Livino, on the north side of the Munster Thal, and in the neighbourhood of the Bernina and on the Stelvio, where it grows as far up as 8,000 feet above the sea. Nor must the Dwarf Pine be omitted, although it often forms nothing more than brushwood of about 6 feet high. Our engraving presents a typical scene amongst these pine forests of the Alps, through the more accessible parts of which rough tracks are cut for summer traffic.

NOTES OF THE YUCCA HYBRIDS FROM MY GARDEN.

My garden is situated at Vomero, Naples, near the old Castel Sant' Elmo, between 700 and 800 feet above the sea, and was formed about six years ago. The old and very interesting castle was built by Roberto the Sage about 1343, and is a romantic grey pile, containing a collection of antiquities. The Vomero, a lofty hill, is a new part of Naples, spread with palaces and gardens. My garden is fully exposed to the winds from every quarter, so that the plants are particularly hardy. The soil is purely volcanic, easily worked, fertile, and free, and all the known Yuccas are thriving here, even during our winters, which are not always free from frost. Amongst many older favourites I cultivate all the new species and varieties, very many of them received through the kindness of the Director of the Missouri Botanical Gardens, St. Louis, Mo., U.S.A. Common in the Naples gardens are *Y. aloifolia* and its varieties, also *recurvifolia*, *flexilis*, *filamentosa* and *flaccida glaucescens*, which is especially common. In the Botanic Garden of Naples are also *Y. elephantipes*, *Treculeana*, *australis*, and *gloriosa*. From the Genoa Botanical Garden I obtained numerous good varieties of *Y. gloriosa*, and from the splendid gardens of Palermo I brought home every year the flowers of many fine species or varieties for hybridisation. Thus it has been possible to gather together within so short a time what is probably the finest existing collection of Yuccas. The imposing *Y. Treculeana* flowers every year in many gardens of Naples, forming very large trees, more particularly in the lovely old garden of the late Mr. Charlesworth, and in that of the Prince Colonna. The fruit-bearing or "mother-plants" of my seedling varieties have been the following, mostly very strong pot-grown plants, but in some cases large plants in the open gardens of my friends here in Naples, and in one instance in Palermo:—*Y. filamentosa* and *f. bracteata* (in our gardens known as *f. major*); *Y. flaccida* and its varieties *glaucescens* and *grandiflora*; *Y. rupicola*, *Y. gloriosa* type and its forms *robusta*, *longifolia*, and *plicata*; *Y. recurvifolia* and *r. folius variegata*; *Y. flexilis*, *Y. Treculeana*, *Y. Schottii*, and *Y. aloifolia* type and its varieties *tricolor* and *gigantea*. This last is a Naples garden variety, which seems to be un-

known to the eminent authority upon these plants, Prof. William Trelease, of St. Louis, unless it should prove to be the same as his *Y. aloifolia conspicua*. The variety *Draconis* is so well known and so distinct in our Naples gardens that it could never be confounded with *gigantea*. *Y. Schottii* was first known in Palermo gardens under the erroneous name of *macrocarpa*—a plant which has not reached flowering force in Italy. A curious and very fine plant is *Y. viridiflora* with large green flowers. My collection now contains about 200 very fine hybrids, all flowering, and more than 2,000 seedlings of the last three years, not yet strong enough to flower. I have also *Y. Sandereana*, a good hybrid plant, issue of *filamentosa bracteata* \times *recurvifolia*, and, contrary to general rule amongst hybrids, it bears seed occasionally. All my other hybrid Yuccas have so far remained completely sterile, though frequently pollenised with their own pollen, or that of other good hybrids or species. The seedlings of *Y. flaccida* and *filamentosa*, if well cultivated and richly manured, flower here in the fourth year after sowing, some plants even during the third year. Hybrids of *aloifolia* only flower after the fourth or fifth year, and those of *Treculeana* only after the fifth year. The growth of all my hybrids is most vigorous and their vitality extraordinary. Their variety of form is such that amongst the seedlings of the same plant no two are alike and many are totally distinct. Generally speaking, they show something of the character of their parents, often more of the father than of the mother, but the contrary is at times the case. Amongst my most notable gains is *Yucca* \times *Elwesiana*, a splendid plant, issue of *Treculeana* \times *recurvifolia*; the leaves are as rigid and thick as those of the former, but as long as those of the latter kind, whilst the very fine pyramidal flower stalk, crowded with brilliant flowers, is much longer than that of either parent. The same parents gave me also my beautiful *Yucca* \times *Fosteriana*, so named in honour of Sir Michael Foster. This plant I consider to be the finest of my entire collection. Its leaves show the thickness and rigidity of the one parent combined with the length and drooping form of the second, while the enormous inflorescence, fully as long as the best spikes of *recurvifolia*, with its long flower stems, has at the same time the width and density of the mother-

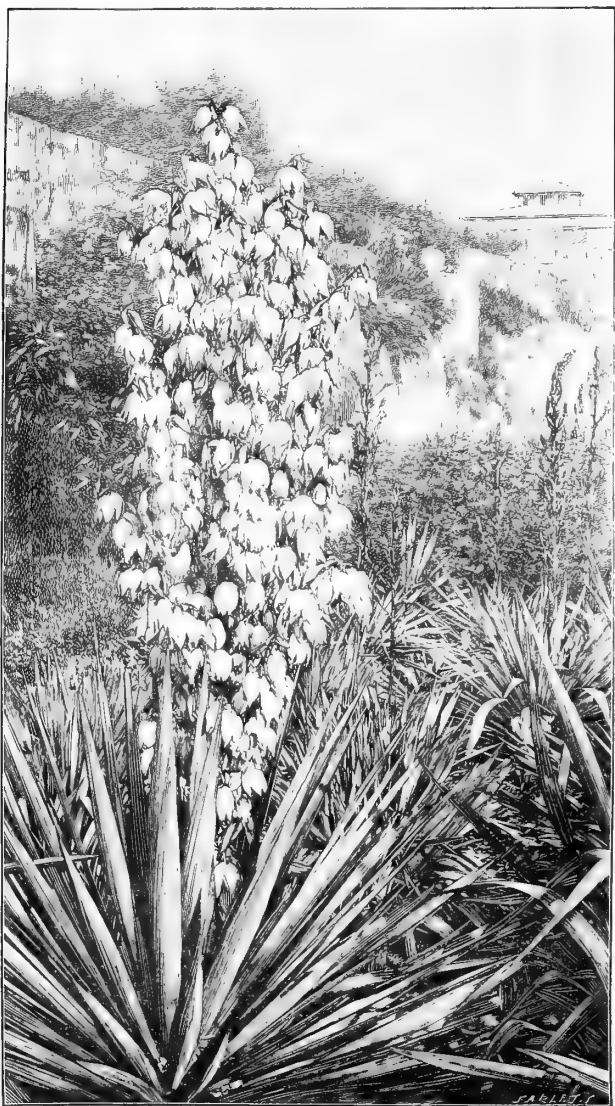
plant, and the individual flowers finer, and rarely or very little tinged with purple. The leaves are not concave, nor filiferous, but brown-margined, pungent, and dark green. After six years of incessant toil my Yucca garden has rewarded me by a splendid show of flowers, those plants which failed to bloom in 1902 having done so



YUCCA COLUMBIANA. (Engraved for "Flora.")

in 1903. The hybrids of *Y. Treculeana* and *gloriosa* are slow to flower, but most of the other forms are remarkable for their early blooming, and for their wonderful abundance in flower. Two of them (*Yucca* \times *magnifica* and *Yucca* \times *Koelleana*) flower in small pots, from a single shoot, in their second year of growth; this would seem to promise such wealth of flower as must result in their general cultivation in gar-

dens. Such are among the most striking results to date. There are still many seedlings of 1898 and 1899 yet unflowered, and all those of the past two or three years. The great feature of my garden in 1901 was *Y. Schottii*, which flowered in June of that year, and being crossed with pollen from *Y. flaccida*, *glaucescens*, *recurvifolia*, and other species (beside itself yielding pollen for further experiments), gave me four large and very heavy fruits. The seed germinated well,



YUCCA TITANUS. (Engraved for "Flora.")

so that I now have about a thousand seedlings, growing vigorously and already showing great variation. This is not more than might be expected in view of the fact that the seed-bearer reaches the dimensions of a large tree, while *Y. flaccida*, one of the parents, is a small, stemless, but free-flowering species. This season I have been less fortunate. In June 1902 I brought from Palermo very fine flowers of *Y.*

brasiliensis (a large tree-species) and *Treculeana canaliculata*, but the cold, wet weather was so unfavourable that experiments failed completely and a year's work is lost. Another plant common in Italian gardens is *Y. De Smetiana*, but, to my knowledge, it never flowers. In Sicily, Catania, and Palermo, are very large plants, trees rather than shrubs, of it, but all alike fail to flower. Other fine species, such as the giant *Y. elephantipes* and its variety *guatemalensis*, flower so late, that up to the present time I have found it impossible to cross them with the dwarf species from the northern states of America. *Y. constricta*, *radiosa*, the distinct *glauca*, and the splendid *Whipplei*, are rare in Italy, and my own seedlings, received from American friends, are not yet of sufficient force to flower. Certainly the most striking typical plants of my garden are the *Samuelas*, received from Professor Trelease, to whom my collection owes much. Very good is *S. Carnerosana*, as is also *S. Faxoniana*. I dress the Yuccas freely during the hot season with manure and gypsum, and during dry weather also give copious waterings. They are very fond of Chilean nitrates. As full descriptions of these plants will eventually be given by Professor Trelease, I will do no more than give as complete a list of hybrids as is at present possible:—

- Y. filamentosa* × *gloriosa* = Albella.
 „ „ × *recurvifolia* = Imperialis.
 „ „ × *flexilis* = Saturnus.
 „ „ × *Treculeana* (not flowered).
 „ „ × *rupicola* = Treleasei.
 „ „ × *aloifolia* = Washington.
 „ „ *bracteata* × *recurvifolia* = Imperator.
 „ *flaccida* × *filamentosa* = *filamentosa* voluntaria.
 „ „ × *recurvifolia* = Flora.
 „ „ × *flexilis* = Gaa.
 „ „ × *rupicola* = Atropas.
 „ „ *glaucescens* × *recurvifolia* = Eros.
 „ „ *grandiflora* × *recurvifolia* = Arnottiana.
 „ *rupicola* × *filamentosa* (not flowered).
 „ „ × *gloriosa* = Aletroides.
 „ *gloriosa* × *filamentosa* = Rex.
 „ „ *robusta* × *flaccida* = Dux.
 „ „ *longifolia* × *flaccida* = luxurians.
 „ „ *plicata* × *recurvifolia* = Darwini.
 „ *recurvifolia* × *flexilis* = grandis.
 „ „ *variegata* × *flexilis* = Princeps.

- Y. flexilis* × *filamentosa* = Augusta.
 „ „ × *flaccida glaucescens* = Regalis.
 „ *aloifolia* × *flexilis* = Sieheana.
 „ „ × *filamentosa* = virescens.
 „ „ × *gloriosa* (not flowered).
 „ „ *tricolor* × *flexilis* = Titanus.
 „ „ „ × *Treculeana* (not flowered).
 „ „ *gigantea* × *recurvifolia* = Heliodorus
 (a giant).
 „ *Treculeana* × *filamentosa* (not flowered).
 „ „ × *gloriosa* (not flowered).
 „ „ × *recurvifolia* = Fosteriana.

Naples.

CHARLES SPRENGER.

OF MIXED WOODS.

THERE is much evidence in the countries where forestry is best practised, as to the advantage of having woods of trees of different kinds, different ages, and of different times of cutting, instead of a complete clearance. The reasons are many, but perhaps the most serious are the following: When we plant a tree like the Larch, putting them in solid masses of the same age, any disease that comes to the tree is much more likely to sweep through the wood than it would if trees of various kinds were intermixed. Wind, often a destroyer of trees, is far less severe in the mixed wood, not only because some of the kinds are wind-resisting, but also because the different ages and heights of the trees help to break its force. The interaction of roots is also more likely to lead to a better annual output of a wood as the roots of mixed trees get more out of the ground than a wood of one kind of tree only. The plan also allows us to have the light-seeking tree, the Pines, associated with those that do well below them, like the Beech. This plan by no means commits us to any monotonous or regular mixture, but allows of varying the wood in a way that is good for it, either for effect or growth, and it allows of adapting the tree to the soil. If we meet with a boggy spot, we may plant it with Willows; a rocky knoll, with Beech, a wind-resister; a wet stretch near a stream, with Spruce.

We may see in the forest-clad mountains of the Tyrol how often the native trees occur together—Larch, Scotch Fir, and Norway Spruce. Where the conditions suit a given kind completely we may see it prevail, but there are many other conditions in which the

trees are interspersed—a group of Larch among a colony of Scotch where the Norway Spruce forms the greatest mass of timber. Also single trees of each kind are scattered here and there with a sprinkling of Birch and Beech, until the ground rises so high that the trees of the Pine tribe clothe the rocks. Why should we not in woodland work more often follow this way, by which vast and steep mountain ranges are clothed in some of the most picturesque forest regions of the world? We should do so for more than one reason.

Mixed planting is, in many conditions, the most profitable. It is the way, too, that best aids us to adapt the soil to the tree; all the more so if in broken ground, or the many places where we find striking differences of soil in a small area. If, to take an example from a few acres of ground I have lately dealt with, we have a wet piece of ground near a stream, there is a good chance for the Norway Spruce, which so often starves in dry soil. Above this wet ground there is a nearly level bed of stiff soil, which grows Oak of the best quality. So we have the Oak happy here with a few Ash among it. Above the level Oak bed, however, there are some acres of a shaly soil, on which the Oak starves; so the stunted Oaks are cleared, to plant with Larch and Scotch and Silver Fir; and these conditions occur in a wood of about twelve acres. It is not intended that any hard lines should be drawn between any of the trees, but the kinds run into each other, as they so often do where the soil or altitude changes in natural forests.

The fine vigour of our native trees may often aid us in forming mixed woods by their persistent way of coming from seed where we least expect them. If in a woodland district we plant an arable field with Pines of various kinds, we often find vigorous Oak, Ash, and Birch seedlings keeping company with the young Pines which had the start of them by a few years. Mice, birds, or other natural agents set the seed, and instead of cutting out the young trees, often healthy saplings, it is better to leave them to vary the wood.

The mixed planting by no means confines us to a fixed rule, but, on the contrary, enables us to take the best advantage of the natural variations of soil and aspect. We might in varied soils enjoy the effect of one tree, passing

gradually into mixed masses, in which both evergreens and hardwood trees are equally suitable. For it, also, the trees should be of different ages, cut at different times, so that the wood would never at any time be shorn of its vigorous and constant forest growth. And this plan would be in no way against beautiful planting, as where it is in use there are not only many instances of good tree growth from surfaces absolutely valueless for any other use, but examples without end of tree grouping as an effective aid to landscape beauty.

* * *

THE BRAZILIAN SPIDER- FLOWERS (*Tibouchina*).

SPITE of their rich colour, their long season of bloom, and their comparative ease of culture, these beautiful shrubs are rarely seen in gardens or in the trade nurseries, and of the whole family few are even in cultivation. 'Tis true that botanists have done their best—or worst—with the plants, which have been *Lasiandra*, were *Pleroma*, and are now *Tibouchina*, though probably to ninety-nine out of every hundred the best known kinds are yet *Lasiandra*, spite of it all. The reason for its English name is not at first sight apparent, though there is something in the tilt of the flower, and the prominent curved stamens suggestive of the garden-spider when at rest, and a relation, at least in colour, to the Virginian Spider-flower (*Tradescantia virginica*). Though almost confined to Brazil the genus is large and varied, including shrubs, herbs, and climbers, many of little garden value. The best known are climbing bushes, and nearly all bear purple flowers of similar structure though differing in size, while as natives of the same region their culture as hot-house plants is in

the main identical. One or two kinds, being found at a considerable height in the Brazilian Andes, do very well under cool-house treatment, with (when in pots) a spell in the open air during summer; but this is only safe with the hardier sorts. Their habit is loose and straggling, but they are easily trained as wall, pillar, or roof-plants, in standard-form, or upon the old balloon shaped frames once common; they are finest, however, planted out in light rich soil and trained near to the glass of a sunny house. As pot-plants they soon become bare and hungry-looking, without constant pinching and cutting back, much of which can be avoided when planted out in a border of rich light soil, with free light and air at all times. So treated, old plants flower with great freedom, making very handsome objects. As exhibition plants or for cutting they have never been a success in spite of their brilliance, the flowers shaking off easily and those of each day falling at night, but they are so large and finely coloured, and borne for so many weeks or even months in unbroken succession, that where a long display is valued in the conservatory, few plants are better worth growing. During the entire autumn several of these plants have been in flower in the conservatories at Kew, and are still showing many flowers within a few days of Christmas. Our engraving of a flowering-spray of *Tibouchina semidecandra* is from a photograph of one of these tireless plants in the Royal Gardens. As a winter flowering shrub *T. macrantha* is very useful, while its fine variety *floribunda* has an even longer season of bloom. Their

beautiful silky foliage is handsome at all seasons, and almost free from insect pests; thrip is the only one that ever gives trouble, and should be watched for. They are easily increased from cuttings of young shoots just as they begin to harden, taken after the annual trimming of old plants in spring; if kept close for awhile they root without trouble, but need careful watering, sufficient air being allowed to dry the silky leaves whenever they have been damped.

The following species have been introduced, but many of them are only to be found here and there in private gardens, and some have probably gone out of cultivation :—

T. Benthamiana.—A low rambling shrub with large oblong-lanceolate leaves rounded towards the stem, thickly veined, covered above with fine rough down and beneath with soft silvery hairs. Its branches are light, of a pale brown colour when mature, angular, and slightly winged. The flowers, borne in clusters during autumn, are of a rich purple, about 2 inches across, shading to a whitish claw in the centre. Organ Mountains.

T. elegans.—This beautiful shrub is one of the most gorgeous of greenhouse plants, but not often seen in perfection. It was first flowered at Veitch's in 1846, and was for many years well grown by Messrs. Backhouse of York, but it is now rarely met with. Its habit is compact, reaching 6 to 8 feet, with short, reddish branches and glossy, strongly-veined leaves of about 2 inches long. The flowers are borne singly and in great abundance during May and June, are over 2 inches across, and of a rich blue shading to purple. Organ Mountains.

T. Gaudichaudiana.—A low shrub, the leaves and stems of which are clothed in soft bristles. Its flowers of rosy-purple appear during summer as clusters at the ends of the shoots. Brazil.

T. Gayana.—A white-flowered perennial herb growing to a height of 2 to 3 feet with the silky hairiness of leaf common to the genus; flowers in late autumn and winter. Andes of Peru.

T. Granulosa.—A strong-growing large-flowered shrub, with thick glossy leaves upon short stems, and handsome flowers of crimson-purple in branched clusters, their petals curving inwards and nearly 3 inches across. Brazil. Syn. *Lasiandra Fontanesiana*.

T. heteromalla.—A tall growing shrub, with rambling stems of many feet and large rounded leaves of leathery texture, 6 inches long and covered beneath with whitish down.



BRAZILIAN SPIDER-FLOWER (TIBOUCHINA).
(Engraved for "Flora.")

The flowers, carried in clusters from July to October, are purple and about an inch in diameter.

T. holosericea.—A very fine kind of strong growth, remarkable for the dense silkiness of all its parts, from whence its old name of the Silvery Lasiandra. Its stemless leaves are borne upon angular bristly branches, with flowers of rich purple opening in July.

T. macrantha.—The best known of the group, and a fine shrub very free in flower when well established, old plants often bearing hundreds of flowers. Coming from a height of several thousand feet in the Andes, it does well in a cool greenhouse, where its growth is

sturdier, and its flowers richer and more lasting than when grown in heat. Pot-grown plants are indeed all the better for several months in the open during summer, and should be well set with buds before being brought inside. It does best planted out, growing with greater luxuriance, and easily adapted to any light airy spot under glass. Its flowers are very large (about 5 inches across) of the richest violet-blue, shading to purple as they mature, and coming as a succession during many weeks from November to early spring.

T. m. floribunda.—Handsome as is the last named, this variety is yet finer, with a dwarfer growth and flowers larger and more free. They are borne almost constantly, even upon small pot-plants, while on strong bushes the blooms sometimes measure nearly 18 inches round. The flowers are rather deeper in colour than in the type, the leaves are rougher, and the growth is more compact and better suited to a small space or to pot culture; it is, however, less robust, fearing exposure even in summer, and needing more heat and some shade during the hottest weather.

T. marmorata.—This is a garden variety, forming a bushy shrub remarkable for the creamy-white blotches upon its dark green oval leaves; its fine flowers are of bluish-purple.

T. meiodon.—A loose rambling shrub smaller in all its parts than those described, with oval leaves of about an inch long and many purple flowers half-an-inch across.

T. sarmentosa.—A cool grown greenhouse shrub from the mountains of Peru, with long trailing branches bearing oval, short-stalked leaves, and large violet or purple flowers nearly 3 inches across.

T. semidecandra.—A stout rambling shrub reaching a height of many feet, with narrow silky leaves with prominent veins and densely hairy beneath; angular branches of a light warm brown. Its large purple flowers are composed of rounded petals, with darker veinings and reddish-purple stamens. The purple-shaded calyx is clothed with dense lustrous hairs, extending as silvery down to every part of the young growths. A free-blooming kind, vigorous, and with a long season of bloom, growing well in a cool-house or conservatory. Syn. *T. Kunthiana*.

T. villosa.—A low-growing shrub clothed with silky down in all its parts, and bearing, during early summer, rosy-pink flowers in sparse clusters.

THE PRIMULAS.*

OF all our mountain plants the Primulas are the most characteristically alpine. They form an attractive group often fine in colour and of peculiar value for the rock-garden. They take up little space and flower for the most part in early spring, while their variety of form offers a wide range of beauty. They are almost all perennials, including such kinds as *P. malacoides* and *P. Forbesi* (plants of Yunnan, which are often grown and spoken of as annuals), and nearly all are hardy in England. While most sorts are of easy culture, there are some, particularly the more alpine kinds, that are difficult to grow except in chosen spots of the rock-garden in which they find some approach to their natural conditions of growth. With two exceptions the Primulas are strictly confined to the northern hemisphere, these exceptions being the Magellan Primrose (*P. magellanicus*), a plant akin to our native Bird's-Eye Primrose, and a native of the extreme limits of South America; and the Java Primrose (*P. prolifera*), found in the East Indian Islands, and nearly related to the *P. imperialis* of Bengal. Throughout their vast area the Primula seeks everywhere the mountain fastnesses with their freshness and pure skies. Though not in general difficult to raise from seed, these are often slow to germinate, the more so if not fresh. The culture of such common garden plants as the forms of Chinese and

* With coloured plate of *P. megasæfolia* from a drawing by H. G. Moon, at Warley Place.



Epilobium angustifolium L.

Japanese Primroses, has little in common with that of the alpine species which must be tended for months in cold frames, and sometimes lie dormant for as much as eighteen months without sign of growth. Such kinds should be sown in a mixture of light loam and sand leaving the surface somewhat rough and uneven. Without regard to any save differences of culture, the garden Primulas may be thrown into four classes as follows: the rock-plants which must be grown between stones or in beds of moss; those growing in the marsh or bog-garden; a third class of delicate plants needing peat soil; and a fourth, of garden plants easily grown.

SECTION I. ROCK PLANTS.—This section embraces the Primroses of Europe, many of them found high amongst the mountains, and of which the Auricula may be taken as an example. They all possess strong fleshy roots acting as a reserve of sap for the entire plant; this tap root is deeply sunk between the stones of the mountain side or the rock-garden, spreading a wonderful network of fibres into every cranny and fissure, and showing special adaptation to the conditions in which the plants are found. This great root-system enables them to withstand the severe drought to which they are at times subject. For soil, all they require is a little light humus, well drained, for they perish with the least excess of stagnant moisture. They delight in free exposure but not full sunlight, and are injured by smoke or fog. The flowers of this group include many of the most brilliant of the family, but of these I can only mention the most important.

ALLIONI'S PRIMROSE (*P. Allionii*).—A rare plant found only in parts of the Maritime Alps, at a height of 4,000 to 5,000 feet, growing in fissures of the limestone rocks as dense tufts of gummy leaves arranged in rosettes, from the centre of which appear one or two flowers about an inch across, of mauve with a white eye. It flowers in May, thriving best in half-shade and between flat rocks.

AURICULA (*P. auricula*).—Found at from 4,000 to 7,000 feet in the Apennines and Carpathians, growing in full sun in crannies of the limestone rocks. It is the origin of the garden Auricula, with flowers of orange-yellow with a lighter eye, and very fragrant. April and May.

CARNIOLIC PRIMROSE (*P. carniolica*).—From the Alps of Carinthia at a height of 3,000 to 4,500 feet. Leaves bright green, smooth, shining, and undulated, with clusters of three to fifteen mauve-coloured flowers in April and May. Old plants form spreading tufts, our finest being more than a foot across.

CLUSIUS PRIMROSE (*P. Clusiana*).—Grows in the limestone mountains of Austria at a height of 3,000 to 6,500 feet, and is one of the most beautiful but rarely found true in gardens. Its oval leaves are of dark green, not dotted and gummy like those of *spectabilis*, nor grey and stiff like those of *glaucescens* (the two kinds which oftenest do duty for it in collections), but faintly edged with white, while the flowers are large, of bright violet-rose, and composed of lobes divided to their middle, unlike those of *glaucescens*, which are more deeply cut. April to June.

COMO PRIMROSE (*P. glaucescens*).—This species grows in the mountains around Lake Como up to a height of 4,000 feet. Its leaves are of pale greyish-green, smooth, rigid, not gummy, but edged with a strong band or nerve which is very marked; fine large flowers of violet-rose in March and April, very free, and of easy culture.

GLUTINOUS PRIMROSE (*P. glutinosa*).—A plant of the eastern and granitic Alps, growing in large colonies up to 6,000 feet and fragrant in all its parts. Its leaves are small and narrow, fleshy, covered with gum, and finely toothed; the short flower-stems bear one to six flowers of bright bluish-purple during April and May. It is of difficult culture, requiring wet, peaty soil, full sunlight, and to be grown in groups, for it dies out when isolated.

HAIRY-LEAVED PRIMROSE (*P. hirsuta*).—Of the Alps and Pyrenees, in granite soils only and at a height of 2,000 to 7,000 feet; is often grown under the name of *viscosa*. The leaves are hairy, oblong, deeply toothed, and sharply contracted towards the flower-stem, which bears beautiful clusters of two to fifteen flowers

of bright rosy-purple during March and April. It should be grown in an open spot, but is averse to lime and to full sunlight. A fine white-flowered form of this plant is known as *P. nivea* and often wrongly called *P. nivalis*—a totally different plant.

SILVER-EDGED PRIMROSE (*P. marginata*).—A beautiful plant found at from 2,000 to 6,000 feet in Switzerland and the western Alps. Its form is very distinct, with a stem of some length and the appearance of a little shrub of 4 or 5 inches high. Its leaves are oblong, irregularly toothed, with a narrow edging of silvery powder; its many flowers are of bluish-lilac, borne during April and May. Thrives in crevices of the rock in half-shade, and should be grown in well-drained nooks of the rock-garden or a dry place in the border.

FAIRY PRIMROSE (*P. minima*).—A species of the central and eastern Alps, at a height of 2,000 to 7,000 feet, and extending south to the Balkans. It is a tiny plant, forming crowded tufts of light green rosettes, with leaves coarsely toothed; the flower is large, solitary or in pairs upon a very short stalk, rosy-lilac in colour, and deeply divided into five lobes. Being found among granite rocks it needs a sandy well-drained soil, full sunlight, and abundant moisture. March and April.

MURET'S PRIMROSE (*P. Muretiana*).—A natural cross between *P. integrifolia* and *P. viscosa*, found freely in the Engadine and Tyrol, in crevices of the rocks with a northern aspect. Its leaves are long and brownish, with flowers of a deep crimson-purple appearing in May or June as beautiful clusters of three to ten flowers.

VAL DAONE PRIMROSE (*P. Œnensis*).—Found in the Tyrol and the eastern Swiss Alps, at 5,000 to 7,000 feet. A pretty plant akin to the hairy-leaved Primrose (*hirsuta*), but known by its crowded tufts and habit of growth, and its thick, clammy leaves, sparingly toothed. Its flowers are large, of bright pale pink with a white eye, coming in April and May.

PIEDMONT PRIMROSE (*P. pedmontana*).—A very distinct form of the Clammy Primrose (*viscosa*), found in the Italian Alps with a range of 1,000 to 5,000 feet. Its leaves are clothed with a dense brownish down, are thick and oblong, and arranged in large rosettes; the flowers are large and numerous, of brilliant

rosy-purple, and handsome. March and April. It is frequent in crevices of the rocks in half-shade.

HYBRID BEAR'S EAR (*P. pubescens*).—A natural cross between the Auricula and the Hairy-leaved Primrose, found in the Alps side by side with its parents. Its leaves are smooth and thick, with large flowers of many colours from yellow through all the shades of crimson and purple, coming in April and May. This plant is in part the source of the garden Auricula.

SHOWY PRIMROSE (*P. spectabilis*).—A plant of the eastern and Austrian Alps, found at from 3,000 to 7,000 feet upon the limestone. It is a beautiful species, akin to the Clusius Primrose (*Clusiana*) bearing large flowers of violet-crimson in early spring. It is of easy culture in half-shade, within crevices of the limestone rocks.

TYROLESE PRIMROSE (*P. tyroliensis*).—A species of the Southern Tyrol, at from 3,000 to 8,000 feet upon limestone. A pretty plant akin to Allioni's Primrose with similarly dwarf habit and tiny leaves, but these are readily known as being translucent (instead of opaque) and toothed, and by the divided lobes of the rosy-lilac corolla. The entire plant is little more than an inch high, and flowers during April and May. It is of difficult culture, requiring porous well-drained soil of peat, humus, and sand, with fragments of limestone, and a spot in half-shade.

SHAGGY-LEAVED PRIMROSE (*P. villosa*).—A plant abundant in the granitic masses of southern Austria, at from 3,000 to 6,000 feet. Its leaves are clammy, covered with hairs, and regularly dented; its flowers, of a brilliant rose colour, appear in March and April. In gardens it often passes for the Hairy or the Clammy Primroses, but may be known from *hirsuta* (of which the leaves are suddenly contracted upon the stalk) by its narrower leaves, less toothed, and gradually tapering, and by the brown hairiness of all its parts. From *viscosa* it differs in the shorter tube of its corolla, its short flower-stalk, and in the greater brilliancy of its flowers. It succeeds in rocky crevices in half-shade, planted in peat rich in humus and free of lime.

CLAMMY PRIMROSE (*P. viscosa*).—A plant of the granite rocks of the Alps and Pyrenees, with a range of 3,000 to 5,000 feet. Like the

Silver-edged Primrose (*marginata*) it develops a thick stem of several inches, often branched like a little shrub. Its leaves are large, toothed, covered with glandulous hairs and with fringed edges; its flowers, borne as large bunches during April and May, are of bluish-lilac. It thrives in peaty soil, between sandstone rocks, in half-shade. Syn. *P. graveolens* and *latifolia*.

WULFEN'S PRIMROSE (*P. Wulfeniana*).—A plant found upon the limestone of eastern Austria, from 3,000 to 5,000 feet. It is a *P. Clusiana* in miniature, with narrow leaves, slightly glaucous, and with a white margin; its rosy flowers are large, solitary (or as many as three) borne upon a short stem during March and April. It needs a well-drained crevice in half-shade (facing east or west) with a mixture of peat and sand.

The foregoing are essentially rock-loving plants, thriving in niches of the rock or in old walls; they can be grown also in pots of light soil, if thoroughly drained.

SECTION II. WATER-LOVING PRIMULAS.—These kinds, of which the Bird's-eye Primrose stands as a type, are found in marshy tracts upon mountains and beside streams; many of them are natives of the Himalayan region and the far East.

ASIATIC BIRD'S-EYE (*P. algida*).—Found in western Asia, from Caucasus to the Altai Mountains. Though akin to the European Bird's-eye (*P. farinosa*) it is distinct in its larger leaves, obtuse-spathulate, bordered with fine teeth, and its large flowers of deep violet. May and June.

EAR-LEAVED PRIMROSE (*P. auriculata*).—A plant of the mountains of Caucasus and Persia, closely related to the last but differing in its longer flower-tube and its larger clusters.

BIRD'S-EYE PRIMROSE (*P. farinosa*).—Found in damp spots of the mountainous and sub-alpine regions of Europe (Britain), central Asia, and Northern and arctic America. Its leaves are oval-obtuse, crimped, and powdered with white beneath; the flowers appear from April to June as terminal heads of light or deep pink. There is a form with white flowers; a second, known as Ware's Primrose, of dark violet with a deeply coloured eye; a third (*P. mistassinica*) from N. America, intermediate between this species and the Arctic Bird's-eye (*P. stricta*); and a fourth variety, the Magellan Primrose,

from Patagonia, a robust plant, 6 inches or more high, with leaves almost spiny and flowers of a pale rose tending to white.

SOUTHERN BIRD'S-EYE PRIMROSE (*P. frondosa*).—A plant of the Balkans, related to the common Bird's-eye Primrose but with leaves of a different shape and densely powdered in all its parts. It was added to our collection by Prince Ferdinand of Bulgaria, and sent out from our gardens at Geneva. May and June.

GIANT YELLOW COWSLIP (*P. grandis*).—A species of the western Caucasus, from 6,000 to 10,000 feet, with large leaves and a stout stem over a foot high, with small tubular flowers in drooping clusters. It has never flowered with us at Geneva but does so with little trouble in England. It thrives upon the moist banks of mountain torrents, reaching a large size, but is not showy in gardens.

CREAMY-FLOWERED PRIMROSE (*P. involu-crata*).—A native of the Himalayan slopes between 12,000 and 15,000 feet, where it forms tufts of bright green, its leaves narrowing suddenly upon the stalk; drooping flowers of creamy-white or sometimes of a bluish shade. From May to July.

THE JAPANESE PRIMULA (*P. japonica*).—Introduced from Japan in 1871, this fine plant is now much grown in gardens. Its bold leaves are of a pale green, and its flowers, carried in tiers upon a stem of 1 to 2 feet, from June to September, are of bright rose in the wild form, but of many colours in its garden varieties.

TRUMPET-FLOWERED PRIMROSE (*P. longiflora*).—Found upon the Alps, Carpathians, and heights of eastern Europe, between 4,500 and 6,000 feet. Its oval-oblong leaves, enlarged towards their base, are slightly toothed and powdered beneath; the rosy flowers carried upon a thick stem during spring, are remarkable for their length of tube.

YELLOWISH PRIMROSE (*P. luteola*).—A plant of the eastern Caucasus, related to *Ps. algida* and *auriculata* but larger in growth and in its more numerous yellow flowers, borne upon long stalks in May and June.

TURKESTAN PRIMROSE (*P. Olgae*).—Akin to *P. longiflora*; found in the mountains of Turkestan at from 7,000 to 12,000 feet. It differs in its leaves, smooth and shining on both sides, and in the longer bracts of the involucre. April and May.

PARRY'S PRIMROSE (*P. Parryi*).—Found in the alpine regions of the Rocky Mountains. Oval-oblong leaves, upright and almost spiny, narrowing to a broad stem; large flowers in clusters of bright crimson, during May and June. It is of difficult growth where the air is dry, needing a moist, spongy soil (well drained) and full sunlight.

POISSON'S PRIMROSE (*P. Poissoni*).—A tender species from Yunnan, and related to the Japanese Primrose but with crisped greyish leaves and large flowers of rosy-lilac in irregular tiers; protection in winter.

NETTED PRIMROSE (*P. reticulata*).—Akin to the Sikkim Cowslip (*P. sikkimensis*) but known by its leaves, heart-shaped at their base, its upright flowers, and minor botanical details. Eastern and central Himalayan region, flowering from May to August.

ROSY PRIMROSE (*P. rosea*).—A species of the western Himalayas, with leaves like those of the Common Primrose but smooth, and bright rosy flowers in March and April; there is a large flowered form, and one of deep colour known as *splendens*.

SCOTCH BIRD'S-EYE PRIMROSE (*P. scotica*).—Though classed with the common Bird's-eye this is a beautiful little plant, distinct in the rounded divisions of the calyx (triangular in *farinosa*), its finely-dented leaves, and its flowers of dark purple upon a very short stem in April and May.

SIBERIAN PRIMROSE (*P. sibirica*).—A plant of Northern Asia, akin to the creamy-flowered Primrose (*involucrata*), bearing in spring small clusters (three to five) of rosy flowers, encircled by long bracts.

SIKKIM COWSLIP (*P. sikkimensis*).—Found in the Himalayas at from 12,000 to 15,000 feet, extending thence into Southern China. Leaves long and ridged, waved upon the margin; drooping flowers of pale yellow from May to July, in large clusters of as many as fifty or sixty, carried upon a stem of from 1 to 2 feet high. This plant is of fine effect beside streams.

ARCTIC BIRD'S-EYE PRIMROSE (*P. stricta*).—A tiny plant of northern and Arctic regions, related to the Common Bird's-eye, but differing in its shorter flower-stem, its leaves unpowdered beneath, and in the very slightly divided corolla of pale rose.

SECTION III. PLANTS NEEDING PEAT OR

SPECIAL CULTURE.—ROUND-HEADED HIMALAYAN PRIMROSE (*P. capitata*).—A species of the heights of Sikkim and Bhotan, at from 12,000 to 15,000 feet. It is a beautiful plant with finely-dented leaves of narrow-oval form, covered on both sides but more densely beneath, with a pale, yellowish powder, extending also to all parts of the flower-stalk and the base of the flowers. These are numerous, of deep violet-blue, borne in a dense, rounded head upon a stout stalk of 6 to 9 inches. This fine kind is rare in gardens, where such species as *denticulata* and *cashmeriana* often bear its name. It flowers from June to November, growing in peaty soil free from lime, and in half-shade; it may be well grown in pots under cold frames.

LARGE-LEAVED PRIMROSE (*P. megasæfolia*).—A beautiful plant from Laghistan and the region of the Black Sea, which though described as long ago as 1866 has only been in cultivation for about three years. Its introduction is due to the botanist-collector, Sprenger, who sent it to the Jardin d'Acclimatation of Geneva, from whence it found its way to England, being first grown by Miss Willmott, at Warley Place, where our artist's drawing was made. It was shown before the Royal Horticultural Society in March, 1901, and received an award of merit. For gardens it is a plant of value, with bold handsome leaves of dark green, thick and leathery, strongly ribbed, and often of a rich red-brown colour. The large flowers of rosy-lilac, either dark or light, are an inch across, and their colour finely contrasted with the bright orange of the tube; they are carried in clusters of variable size, showing five to fifteen or even more blossoms, upon a stout stem of 9 to 18 inches in height. At Geneva it is in flower from September or October throughout the winter, and as late as March or April of the following spring. It thrives in a light peaty soil free from lime in any form, doing best in half-shade; its seeds are very slow and uncertain in germination. In England, to do well, it must be flowered under glass, but its freedom and long season of flower make it a plant of value for the conservatory during winter.

VELVET PRIMROSE (*P. mollis*).—A rare plant from the mountains of Bhotan and of similar culture to the last-named, with large velvety leaves and small flowers of deep rose with a red tube and dark eye, carried in somewhat irregu-

lar tiers of fifteen to twenty blossoms. May to August.

GLOBE-HEADED PURPLE PRIMROSE (*P. purpurea*).—A robust plant with narrow upright leaves of dark green, crisp, and nearly smooth at the edge, yellowish-white on their under surface; the drooping flowers of deep violet are of fair size and carried in terminal clusters from May to July. Alpine regions of Afghanistan and the Himalayas. It is a plant of difficult culture, needing a light peaty soil free from lime and a position in half-shade.

SIEBOLD'S PRIMROSE (*P. Sieboldii*).—A beautiful plant from the gardens of Japan, with bold foliage heavily indented and crisped, and covered with soft down; the large flowers, with deep-cut lobes, are of rosy purple in the wild plant but of many colours in its garden varieties, some of which carry flowers with their margins laced or curled. The plant should be grown in a mixture of peat, rotten-wood, leaf-soil, loam, and stones, with a position in half-shade.

STUART'S PRIMROSE (*P. Stuartii*).—Allied to the Globe-headed Purple Primrose (*purpurea*), but with golden flowers coming from May to July. It needs a deep porous soil, careful drainage, a place in half-shade, and protection from northerly winds. Himalayas.

CALIFORNIAN COWSLIP (*P. suffruticosum*).—A plant growing in small tufts upon the heights of the Rocky Mountains, with narrow spatulate leaves toothed towards their apex, and large flowers of rosy-purple with a yellow eye, carried in small clusters. April and May. It is best in a sheltered and well-drained niche of the rock-garden, with a fair amount of sunlight.

SECTION IV. HARDY GARDEN PRIMULAS.—Here are classed the kinds widely known and grown in England—the country of the Primrose; kinds such as the many beautiful double and single forms of Cowslip, Polyanthus, Oxlip, and Primrose, and with them a few Himalayan and Siberian plants which may be so classed for their beauty and their hardiness. Amongst them the lovely *P. cortusoides* of south and eastern Siberia, which yields from April to June its clusters of bright rosy flowers in delicate contrast to the neat tufts of green foliage; and for moist spots the Himalayan *P. cashmeriana*, a fine variety of *denticulata*, carrying its hundreds of flowers in dense heads of lilac, purple, or, more rarely, of white. Such is a rapid survey of

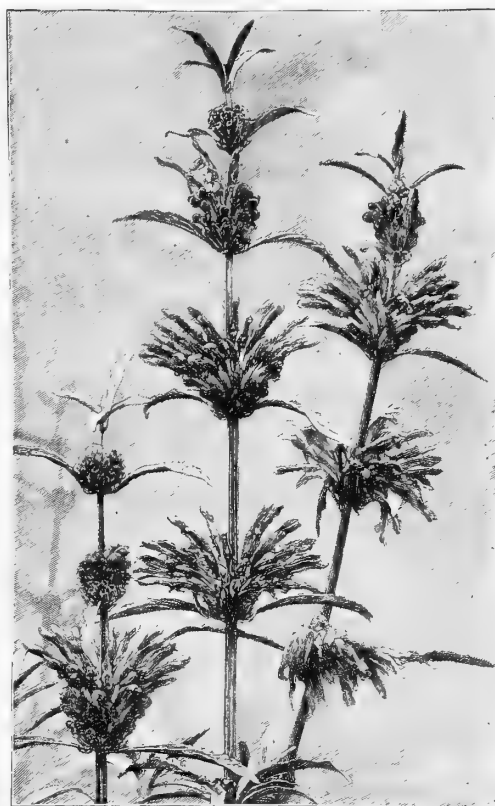
the Primulas most useful in gardens. Almost all the species yield seed in abundance, but even when it germinates it is often only after twelve or eighteen months of waiting.

H. CORREVON.

Jardin d'Acclimatation de Genève.

THE LION'S-TAIL (*Leonotis leonorus*).

THOUGH the vast Mint family (*Labiatae*) of lipped-flowers is mainly confined to the warm-temperate or Mediterranean region, its representatives are found more sparingly in warmer parts of Africa and America, and among these tropical



and semi-tropical forms are the Leonotis. The Lion's-tail, that best known in English gardens, comes from those grassy uplands characteristic of the lower mountain regions of Natal and the Cape, from where it was brought nearly 200 years ago. Though several species are showy and attractive this would seem to be the only kind grown

in English gardens, nor is this by any means a common plant. In the south-west it is successfully grown out-doors, but over the great part of our islands though well-established plants may bloom outside in late summer, it cannot stand a winter in the open, but is worth its place anywhere as a pot plant. The long spikes of orange-scarlet flowers, with a lighter throat, about 2 inches long and covered inside and out with short hairs, are borne tier above tier with a score or more of flowers in each whorl. These handsome clusters last in beauty for several weeks and are quite unlike any other flower. In Mohamedan countries it is a general favourite, and known as the "minaret plant" from its fancied resemblance to these many-storeyed buildings. Upon the Mediterranean coast it is also common and its shrubby character so develops during a series of mild winters as to reach 9 or 10 feet in height, with flower-stems of proportionate length. These are excellent when cut, lasting well in water and pretty under artificial light seen in long spikes. The leaves are long and tapering, of a pale greyish green, with a graceful downward droop.

For English gardens young plants should be raised in early spring from cuttings of the side-shoots, which root readily in a gentle bottom-heat. Potting off should be done as needed and the plants fully exposed during summer and housed in early autumn; they will then bloom inside during winter and spring, and if lightly cut back yield a second show planted in the open

border. Pinching of the young plants should be done with care, for if stopped too late it results in weak twigs and no flowers; second year plants should be trimmed after flowering and then left alone. The object is to get stout, well-ripened growths of 3 to 4 feet; weak shoots will not flower, nor is it strange in view of what it must cost the plant to produce such spikes of colour. Trying winds or brusque changes of temperature must be avoided, for a check often causes loss of leaves and a melancholy aspect. During dry weather waterings should be copious, with liquid manure from time to time, for in its native haunts the plant is almost an aquatic, growing beside streams and in moist bottoms. In town gardens it rarely does well, being sensitive to the fogs and darkness of our winter days, but in districts more favoured it often makes a brave show during the dull season. Where cuttings are not to be had the plant may be raised from seed, which is freely produced and often springs up around the plants in gardens of the Riviera. There is a variegated form to be found in the south of Europe, and a white variety is grown in gardens of Capetown, but it has not yet found its way to this country.

BOOKS.

"THE PRIMROSE AND DARWINISM." *

THOSE who accept the Darwinians at their own valuation might be enlightened by reading this book, which shows the shallow methods and hasty reasonings of the school of Darwin and Lubbock, and their followers, like the late Mr. Grant Allen. The followers of Darwin were much like the old florists, who inclined to knock anybody on the head who did not accept their

* "The Primrose and Darwinism," by "A Field Naturalist," M.A., Camb. London: Grant Richards. 6s.

little formulæ. One of the saddest things about the excitement was the contempt of the opinions of some of the wisest and most scientific men of the time, such as Quatrefages and Owen, who gave to the craze its true name of "Conjectural biology." The idea even among those who ought to know better, that we "didn't know everything down in Judee," or anywhere else, about the evolution of life before Darwin's time is a pure illusion.

Darwin, as the result of experiments made by him on the fertilisation of flowers, drew several conclusions. We select two as good examples of the weakness of the Darwin case.

"The first and most important . . . is that, generally, cross-fertilisation is beneficial and self-fertilisation often injurious." And, again: "Scarcely any result from my experiments has surprised me so much as this of the prepotency of pollen from a distinct individual over each plant's own pollen, as proved by the greater constitutional vigour of crossed seedlings." Furthermore: "The simple fact of the necessity in many cases of extraneous help for the transport of pollen renders it highly probable that some great benefit is gained; and this conclusion has now been firmly established by the proved superiority in growth, vigour, and fertility of crossed parentage over those of self-fertilised parentage."

By self-fertilisation is meant that the pollen of its own flower (or of a flower on this same root) fertilises its own stigma. By cross-fertilisation is meant that pollen from a flower growing on a different root (in case of heterostyled plants one of a different form) was applied to the stigma. Darwin, in making his experiments, made use of the following plan, as described by himself: "A single plant, if it produced a sufficiency of flowers, or two or three plants, were placed under a net stretched on a frame. On the plants thus protected" (from the visits of bees and other insects) "several flowers were marked, and were fertilised with their own pollen, and an equal number on the same plants were at the same time crossed with pollen from a distinct plant. The crossed plants had not their anthers removed."

The author points out the weak points in Darwin's method as follows:—

"The cross-fertilised plants had a great advantage. The self-fertilised plants had only

their own pollen, and that developed under a net to fertilise them; but the cross-fertilised plants had not only their own pollen—their anthers were not removed—but pollen from another plant applied to them as well, *and that, too, grown naturally outside the net*; for Darwin wished, by leaving the flowers their own pollen, and, at the same time, crossing them with other pollen, 'to make the experiments as like as possible to what occurs under Nature, with plants fertilised by the aid of insects.' The cross-fertilised had, consequently, two sets of pollen to choose between, and whichever happened to be most in its prime, that would exercise a 'prepotent' influence in the fertilisation. But the flowers fertilised with their own pollen had no other pollen but their own to depend upon, and *that developed under a net*, which must fertilise them or none at all."

"Such a system of experiments evidently gave to the *cross-fertilised flowers a very great advantage* over the self-fertilised ones, and consequently a very great advantage for the production of better developed seeds, and for the stronger growth and vigour of the seedlings raised from them" (quoted from p. 60).

Darwin's experiments, which he said proved the "prepotency of pollen from another plant over that of a plant's own pollen," merely proved the prepotency of pollen grown on a plant uncovered over that of pollen grown under the shade of a "close-meshed net." The wonder is that Darwin failed to perceive the unequal conditions. Now that his method is explained his errors will be patent to every florist. They will thus be saved from unnecessary and unprofitable outlay which many in the past have suffered, from placing reliance on Darwin's views; as the agriculturists in New Zealand and Australia about the Red Clover, and many in our public and private gardens and nurseries about cross-fertilisation.

In many cases also the flowers under the net were left to pollinate themselves, and the exclusion of the full influence of the wind was a further disadvantage even to the efficient pollination of the self-fertilised flowers.

"The influence of the solar rays, too, would be greatly diminished in passing through a closely-meshed net, and consequently they would be much debarred from exercising their full maturing power on the anthers, and so on

the pollen of the self-fertilised flowers. Radiation would likewise be almost entirely prevented by the net, and the dew would consequently fail to fall on the anthers. The importance of this influence cannot be over-estimated. In the mornings of early spring, after clear and still nights, we have frequently found the flowers of the Primrose bedrenched with dew. Occasionally the dew deposited on the anthers of the short-styled form has been so great as to lie upon the anthers and entirely to fill the orifice of the corolla. Thus the anthers of neither form could attain under such conditions their natural condition for fertilisation. The stigmas would likewise be similarly affected, as the cups of their flowers were likewise very frequently filled with dew."

As regards the other chapters of the book, we regret we have not space to attempt to do justice to the author's very clear and incisive arguments, notably Chapters XX.-XXIII., in which the Darwinian theory of a special relation between the stamens and pistils of the same length in trimorphic flowers (different flowers of the same species, in which there are three different lengths of styles and stamens) is shown to be untenable.

BEAUTIFUL AND RARE TREES AND PLANTS.*

WE all know the many good things that come from the North of Ireland, particularly the men and women of that region, but at first sight it might not seem to be a genial home for trees and plants of warmer countries. Lord Annesley, however, has made his picturesque and beautiful home a very treasure house for lovers of such things. No doubt the sea helps him, as it always does by protecting with its friendly mantle the things that grow near it. It is a well-printed book, illustrated with the best "process" cuts, giving an account of some of the most beautiful hardy plants and shrubs in cultivation, and the plates give an excellent idea of their habit. Some of them are extremely rare, others, like the Lawson's Cypress and Métaké Bamboo, are not so; the Poison "Ivy" common in American hedges, we should have preferred to see omitted, as it is not a rare plant.

Dwarf forms of the Common Spruce are also quite useless, and the same may be said of the variegated forms of the Redwood and other variegated conifers. The botanical names of various authors are given fully in this book, but we miss the English names. Amongst the rare plants figured and described are *Lomatia pinna-tifolia*, a beautiful evergreen shrub, very difficult of propagation, but quite hardy and shown as a fine bush. *Eucryphia pinnatifolia*, also difficult to raise except from seed, though the fine plant at Castlewellan flowered in 1901, and a number of seedlings have been raised. A handsome shrub from New Zealand is *Brachyglottis repanda*, with bold indented leaves 9 inches by 6 inches, pale green and white beneath, but, being tender, it can only be used in the open in mild districts. A fine evergreen Oak from Japan (*Quercus acuta*) is well shown, also a very large tree of *Rhododendron arboreum*, 30 feet high and 130 feet round. Other scarce shrubs are *Daphniphyllum glaucescens*, an evergreen from Japan; *Idesia polycarpa*, a deciduous tree from the same country, bearing on the female plant pretty blue berries; and *Fagus cliffortio-ides*, a rare and graceful Beech from New Zealand, with small leaves giving fine colour effect in spring. Several kinds of Pittosporum are also noticed, including the dainty *P. Colensoi*, which is quite hardy at Castlewellan. Thunberg's Vine (*Vitis Thunbergii*) is also figured.

Much of the book is devoted to conifers, and amongst the rarest of these are *Glyptostrobus heterophyllus* 5 feet high, and perhaps the rarest conifer in British gardens; a fine *Abies bracteata*, rare even in its native country of California; and the beautiful *Pinus Montezumæ* of Mexico, which is only hardy in such favoured spots as this. Some other kinds which rarely do well, such as the Japanese Umbrella Pine (*Sciadopitys verticillata*) and *Juniperus recurva* are finely shown, and *Fitzroya patagonica*, a rare and slow-growing tree of deep green colour from the extreme of South America. The volume concludes with a list of plants proved hardy at Castlewellan, which is of interest to planters as showing the wonderful adaptability of many plants to careful experiment such as that carried on by the author.

* "Beautiful and Rare Trees and Plants," by Earl Annesley. Illustrated. *Country Life*, Tavistock Street, W.C. New York: Charles Scribner's Sons.

FLORA

AND SYLVA.

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FEBRUARY, 1904.

[Monthly.

THE FAILURE OF THE CALIFORNIAN CONIFERS.

IN talking with Mr. Anthony Waterer the other day about the great change in the once prevalent taste for planting the Californian conifers, and of the failure of some kinds like the *Wellingtonia* and *Araucaria*, I regretted to hear him deploring the failure of others such as *Abies nobilis*. It is not only that we have to contend with the tenderness of some of the trees so stricken by frost in our valleys, but there are other and more subtle troubles of which it is not always easy to see the cause, in trees of whose hardiness there is no doubt. I planted a thousand White Pine, which is hardier than most Californian trees, and they thrived for some years, but are now dying off in a way for which no insect or other cause can be seen. As regards California, we have to compare our dull watery climate with one of the finest in the world: the long gentle summer and the winter rest on mountains deeply covered with snows which dissolve gradually in spring, so that the trees get a sufficient rainfall with a thorough ripening of their wood. Anyone who has seen the Pacific mountain trees in their own country can hardly wonder

that some of them should fail in ours. In all the changes of fashion among trees there never was one in which people were so carried away as by these giant conifers, nor one in which failure has been so complete. And we have not only to suffer the loss of these trees but there is the penalty of our neglect of the trees of the forest plain, from Oaks to Maples—far more suited as they are for a lowland country, than the conifers of those lovely mountains fanned by Pacific Ocean breezes. Similarity of climate is a condition we should always remember, and the more like the climate of our own country, the more certain success will be. The region of the Corsican Pine, for example, and that of the Cedars of North Africa, rises so high that it has somewhat the same conditions of climate as our own country, the proof being that we see our own hardy wild flowers and shrubs growing about them. It is not all failure with the Pacific coast trees, because we have still some trees like the Western Hemlock and the Sitka Spruce, which are of proved value, and we must be content with such. Our aim should be not the increase of species, but making good and artistic use of those that not only

endure but thrive in our climate. Hardiness, though an absolute need, is but one condition, as the hardiest trees may fail. It is a blessing in disguise that we have not too many, because people are so apt to mistake a collection for a wood, and the more kinds some planters have the worse the plantation for any good effect. In spite of failures we have enough evergreen trees adapted to the climate of Europe, and which are quite able to give us all the effect we seek in woods and pleasure grounds. Those evergreen trees we have proved to be good, whether they come from Europe, or the colder parts of America or Asia, we should plant in the true woodland way and not in the conventional pinetum. The very plan of that has helped to make these trees unpopular and at the same time is dead against their health; because on the mountains where Pines are found, there does not occur that rich grass which sucks up like a sponge all the water that falls in our often dry summers, especially in the southern districts. A minor cause of failure which we can but just notice is, that the trees are often planted when too old, from plants brought up in pots and often transplanted too late. The rarer kinds are not always to be bought in the way forest trees should be, *i.e.*, as seedling plants about two years old. I am now planting Atlantic Cedars and Numidian Fir, very promising-looking plants, but from having been grown in pots the roots are more like clinkers than roots, and I shall probably lose many of the trees. Grafting, too, and propagation from cuttings are also dead against suc-

cess and were frequently resorted to in former years. A tree might succeed planted small as a healthy seedling, which would fail in other and more expensive ways. S.

A GREAT LONDON MARKET NURSERY.

THOUGH modern invention has brought about no such revolution in horticulture as in many arts and crafts, yet there have been changes in garden husbandry wide and far reaching, and nowhere are these newer features better seen than in such an establishment as that of Thos. Rochford and Sons, growers for the London market, whose vast ranges of glass are seen by travellers upon the Great Eastern Railway, conspicuous even among the many nurseries of Cheshunt and Broxbourne. It is a little town of glass devoted to plants, with street after street of forcing houses, vineries, and propagating pits, with packing sheds for each department, stabling, cold-storage, and a small army of men and boys to do its work. It is in the extension of these great plant factories, in which plant-growth upon a vast scale is made (as much as it can be) a matter of machine-like precision and certainty, that we see the most striking outcome of the modern spirit in horticulture; with a great output the cost of production is reduced to its lowest, while the results are of a high standard of excellence. Even then, as Mr. Rochford admitted during our recent visit, when all has been done that art and experience can devise, the grower is yet much at the mercy of those natural forces beyond control: "a few days of sunshine instead of a fortnight's unvaried gloom would have more than doubled our Christmas output of cut flowers; but, fortunately, it is the same for all."

A large part of the establishment is given up to the growth of *retarded* plants, the bulk of which have been kept for many months in frost in the great refrigerator—a large building of eight chambers, in which the cold is generated by a twenty horse-power engine (with a second in case of temporary need), which is working the whole year round save for about a fortnight in each year for repairs.

The chambers are now nearly empty, but they are stocked early in each year as the new shipments come in, until the whole is filled with a vast quantity of bulbs, roots, and shrubs, which, so soon as they show any tendency to growth, are subjected to frost and so held dormant through the summer until forced supplies are again in request. Most things are frozen for half the season, many for nine months, and some for as long as nearly a year. The list of bulbs and tubers so retarded has gradually increased, and now includes many of the fine Japan Lilies, Lily of the Valley, Spireas, Rhubarb, Seakale, the hardy Ghent Azaleas, and other things, and the quantities treated may be gathered from the long ranges of glass given up to their subsequent growth, and that the one item of Lily of the Valley crowns runs up to over £10,000 a year. Beside what they grow and market, Messrs. Rochford supply quantities of these frozen plants to private and other gardens in which the demand for them is greatly on the increase as the advantages of the system become better known. Though they hardly need forcing in the ordinary sense, special care is needed in the details of watering and temperature for plants coming through so abnormal a winter, but with a gentle heat better results are got than with ordinary forced stuff. The contrast between crowns of Lily of the Valley *retarded* and *forced* is a convincing proof of what is gained, the weakly leafless stems of the forced plants showing badly beside the abundant leafage and stout spikes of the frozen crowns. In the height of the winter season the nursery sends to market some 8,000 bunches a day of these flowers, all carefully sorted into nine grades according to quality, by a large staff of men and boys, the finest bunches being of spikes 18 inches to 2 feet in length. The fine Spireas and Lilies placed on the market for Christmas are very different under this gentle culture to the unhealthy-looking product of strong heat and semi-darkness. There are tricks in the trade, as Mr. Rochford laughingly admitted, tricks which have had to be found out by experiment and failure, and which they do not make public; these are details as to the degrees of cold found to produce the best effect in different plants, and the length of time each will stand the ordeal without injury. Such matters

have also to be in part decided by the condition of the plants themselves in different years, and upon such little details much depends.

The same excellence is shown in all the departments of the nursery. The houses emptied by the recent demand for Crotons were already restocked with young plants in all the best kinds, including the fine new variety *turnfordiensis*, obtained here and recently shown with distinction before the Royal Horticultural Society. Its colours are finely contrasted, the broad, rich patches of golden yellow extending deeply into the leaves from their base, giving it a distinct and showy character. A further range of glass is given to fine-leaved plants and Palms in all stages of growth, with many large clumps of Raphis, and finely-grown Kentias and Cocos of many feet in height. A few plants of the Golden Kentia are grown, but when their first freshness is past the leaves are so like those of a scorched or starved plant that it cannot be called ornamental. Another evidence of high culture is the series of vineries, each of great length, and given up entirely to the growth of winter Grapes. The display of fruit, even after the huge Christmas demand had been met, was remarkable, the clusters of Black Alicante and Gros Colmar hanging in profusion and in fine condition. The supply is timed to last into April of each year, or until the first early Grapes appear. The day's allowance was in process of cutting, eight to twelve bunches being carefully packed in baskets, which are carried to market by the carts of the firm. As our tour extended, well-nigh every market plant of importance was seen in succession, grown either for cutting or for sale as pot plants. A batch of the retarded hardy Azaleas were nearly over though still brilliant, but for blaze of colour nothing came near the pink winter-flowering Begonias, a quantity of which, made up in baskets for market, would tempt anyone's money in these dull days, and were a spot of dazzling brightness even when seen from the railway. The Pandanus house was crowded with good plants, including a stock of the new Golden-leaved Pandanus just received from America, the merits of which are still on trial by English growers. A second part of the nursery, separated by a few minutes' walk, is given to the growth of Ferns of many sorts and sizes—Aspidistras, the fine-leaved Asparagus,

and Araucarias, these last grown, as is usual also in Belgium and in the south of France, from cuttings. Tastes will differ in such matters, but a few stray seedlings amongst the rest were far more graceful in appearance than the stiffer large-leaved plants, which throw a rank of heavy leaves from the very base; true this conceals the pot but it gives the plant an artificial appearance. Perhaps the most pleasing aspect of the existence of this and other huge plant factories is, that they prove that the love of plant and flower has taken a firm hold upon our city populations, and cannot fail to react insensibly to the well-being of the nation. In view, also, of the enterprise and method displayed in this great plant-growing centre, it is refreshing to learn that, spite of hostile tariffs, foreign customers are not wanting for produce of so uniformly high a standard, making it certain that in the event of the enforced lowering of such barriers our growers need not fear to hold their own with continental nurseries.—B.

THE GARDEN OF DAMASCUS.—Wild as the highest woodland of a deserted home in England, but without its sweet sadness, is the sumptuous Garden of Damascus. Forest trees, tall and stately enough, if you could see their lofty crests, yet lead a bustling life of it below, with their branches struggling against considerable numbers of bushes and wilful shrubs. High, high above your head, and on every side all down to the ground, the thicket is hemmed in and choked up by the interlacing boughs that droop with the weight of roses, and load the slow air with their damask breath. The Rose trees which I saw were all of the kind we call *damask*—they grow to an immense height and size. There are no other flowers. Here and there are patches of ground made clear from the cover, and these are either carelessly planted with some common and useful vegetable, or else are left free to the wayward ways of Nature, and bear rank weeds, moist-looking and cool to your eyes, and freshening the sense with their earthy and bitter fragrance. There is a lane opened through the thicket, so broad in some places that you can pass along side by side—in some so narrow (the shrubs are for ever encroaching) that you ought, if you can, to go on the first and hold back the bough of the Rose tree. And through this wilderness there tumbles a loud rushing stream, which is halted at last in the lowest corner of the garden, and then tossed up in the fountain by the side of the simple alcove. This is all. Never for an instant will the people of Damascus attempt to separate the idea of bliss from these wild gardens and rushing waters.—EÖTHEN.

THE GREATER TREES OF THE NORTHERN FOREST.—No. 11. THE WHITE WILLOW (*Salix alba*).

IF asked to name our most beautiful native tree I should name the White Willow. It is not popular with planters, but if one wanted to make a picture of an ugly marsh or bare stream bank where is the tree that would do it so well in a few years? Happily it plants itself over the valleys and by the rivers of nearly all European countries; in the valleys of France and in our country, especially towards the east, it is abundant. Whether we plant in woodland, wet or marshy places, or beside pools in parks, or by the side of streams, everywhere it helps us with good effect; the very opposite of the Oak in its elegance, lightness, and colour. Where the tree grows well by rivers or lakes, tall trees of it may often be seen 80 feet high and from 12 to 15 feet girth. Where distinct effects are sought from a plantation it is necessary to keep off browsing animals. I was once proud of putting 1,800 Willows beside the sources of the upper Medway, but I did not count with cows, rabbits, and water-rats, and I do not think that more than two dozen of the trees survive.

If any thought of artistic planting, in the best sense of what is right and natural, ever enters the mind of men instead of the muddle mixtures of our day, the White Willow will take a high place, for no "Olive silvery Sirmio" has a more beautiful effect than the White Willow, well planted, gives on marsh, river-bank, or rich bottom land. It faces the



POLLARD WHITE WILLOWS, EAST BERGHOLT, SUFFOLK.

(Engraved for "Flora" from a drawing by H. G. Moon.)

Northern Ocean winds and is nowhere happier than in our cold eastern lands where the air is fragrant with the breath of its pale flowers in spring.

The great facility in propagation of the Willow, which every grower takes advantage of, is against the tree and is the cause of some writers describing it as short-lived. Naturally, if we increase the tree from shoots we cannot expect the same endurance and stature that we do from seedling trees. Nature did not make the flower-seed vessels for nothing, and the noble trees one sees here and there are from seed. As the seed is plentiful we ought always to raise the trees in that way. In the eastern counties, near the coast, it attains perhaps its finest development in Britain, and is among the trees that may be used to plant as a first defence against the sea-winds.

WOOD.—Apart from its beauty, there are few trees (a fact which is not generally known or they would be more often planted) that are so valuable for their wood, good specimens being precious for making cricket-bats. Large and well-grown trees are more valuable than Oak and more difficult to procure. The wood is very tough, easy to work, denting and not splitting when struck; planks are valuable as linings and for brakes as fire resisting. If we want the best timber we should plant it in alluvial soil by streams and lakes; and also the best effects, since the spiry leaves go best with other waterside trees and plants.

Like so many other trees, it is all the better for grouping and massing,

and we get a much better effect in that way than by mixing it up in plantations, as is so commonly done. The fact that it does best in certain soils should encourage us to plant it there in masses. Better three acres of it than three trees. Bold masses of Willow trees growing near the house give pleasant shade, and a great many hardy plants may be grown beneath that shade.

To the field artist or tree-lover the White Willow is known at sight or a mile away, but there is so much confusion among Willows, and such curious hybrid forms occur, that the late Mr. Syme's description of the tree may be of use in distinguishing it from those Willows coming nearest to it in character. Syme, author of the third edition of "English Botany," was one of those botanists who took a keener interest in living things than in the dried material of the herbarium, and I think the best of all British botanists. He rather reluctantly puts the Yellow Willow (*S. vitellina*) under *alba* as a form, but from our point of view this will not do, let us keep the trees distinct, as they are in effect, in colour, and in size.

"A tree attaining a great size, with thick fissured bark; branches more erect than in *S. fragilis*, the shoots of the year generally silky pubescent. Leaves $2\frac{1}{2}$ to 4 inches long, with the lateral margins more regularly curved from the base to the apex than in *S. fragilis*; and in the typical form, both sides are clothed with silky white hairs, especially when young; when old, the upper side becomes green from the pubescence being sparse, the under side in one variety at length nearly denuded and glaucous. The male catkins are shorter and more slender than those of *S. fragilis*, with the filaments and anthers darker yellow. The female catkins are much more slender and lax than in *fragilis* and *viridis*, with longer catkin-scales and with very shortly stalked

ovaries, which are more ovate and less pointed, and remain green, even when ripe, and have the styles shorter than the stigmas. Both the male and female catkins are more erect while in flower."

VARIETIES.—As with so many trees there are varieties, but from the forester's point of view they are no good. Botanists now class the Yellow Willow (*S. vitellina*) as a variety of the white, but from our point of view the trees are distinct in colour, form, and size, as is at once apparent where the two kinds are seen growing side by side. Hybrids between the White and the Crack Willow come nearer to our tree in dignity and effect, but when we plant the White Willow it is better to have nothing to do with any but the true form, always, where possible, raised from seed; and nurserymen who grow Willows should take note of this need.

Although among the greater trees we do not admit hybrids or varieties, it is well to give the list of varieties, hybrids, and synonyms from a botanical point of view. Some of these forms are valuable in gardens. Some of the hybrids take the tree form, and others entered here as forms are in the living state quite distinct in stature, form, and colour.

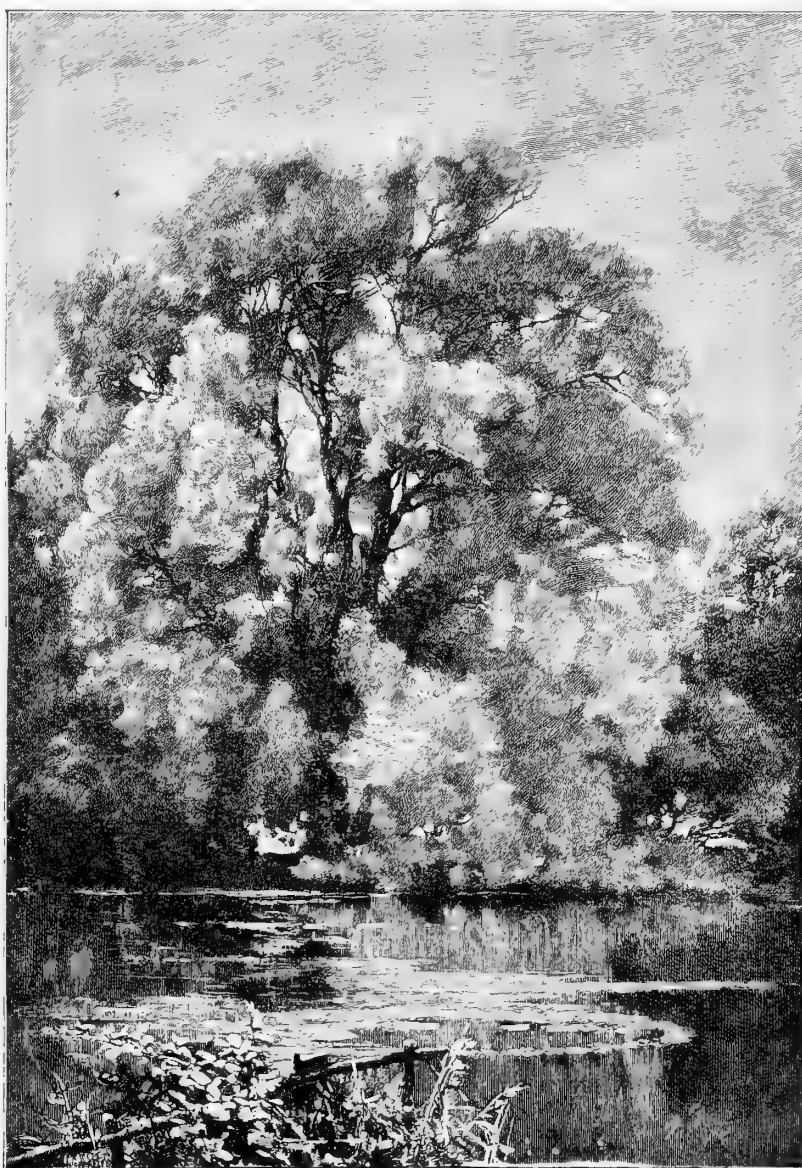
- S. alba* (L.).
- " " *arclatensis* (Delav.).
- " " *argentea* (Wimm.).
- " " *aurea* (hort.).
- " " *pendula* (hort.).
- " " *Souchetii* (hort.).
- " " *caerulea* (W. Koch).
- " " *pendula* (hort.).
- " " *latifolia* (Anderss.).

- S. alba leucophylla* (hort.).
- " " *micans* (Anderss.).
- " " *microphylla* (And.).
- " " *ovalis* (Wimm.).
- " " *regalis* (hort.). (And.).
- " " *splendens* (Bray).
- " " *viridis* (Wahlenb.).
- " " *vitellina* (W. Hoch).
- " " *aurea* (hort.).
- " " *aurantiaca* (hort.).
- " " *britzensis* (Spaeth.).
- " " *flava* (hort.).
- " " *pendula* (hort.).
- " " *nova* (hort.).
- " " *Souchetii* (hort.).

HYBRIDS.

- S. alba* × *babylonica*
- " " × *fragilis* (Mey.).
- " " × *nigricans*.
- " " × *pentandra* (Ritschl.).
- " " × *triandra*.

SYLVANUS.



WHITE WILLOW, HIGHCLERE PARK.

CYMBIDIUM RHODOCHILUM.*

THIS new and handsome plant was brought from Madagascar by M. Wapour, in 1900, and first flowered at Kew in June of the following year. It was found growing in the forks of trees at a height of 1,800 to 2,000 feet in company with the Madagascar Stag's-Horn Fern; in fact, the roots of the *Cymbidium* were growing freely amongst the barren fronds of the Fern. Both plants were new, and arrived at Kew still united as when in growth, though the Fern proved to be dead upon arrival. They were undisturbed, however, during their first year at Kew, the Orchid making its first growth by the part absorption of its late companion of Madagascar, no other material being supplied to the roots.

The pseudo-bulbs of the Orchid are ovate and 4 to 6 inches long; dark green when young, becoming almost black with age. The leaves are six to ten in number, dark glossy green, 2 to nearly 3 feet long, tapering to a point and deeply channelled down the centre. The flower-stalk is erect with usually fifteen to twenty buds and flowers, of which not more than four to six are open at the same time; the individual flowers are about 3 inches across, the sepals and petals being light green heavily blotched and dotted with darker olive-green, the front lobe of the lip is of a rich rose-red colour, while the bracts at the base of the first few flowers are light green, boat-shaped, and about 2 inches long.

As will be seen in the coloured plate, this new *Cymbidium* differs from all

other species in the colour and shape of the lip; these points of difference make it of special interest to all orchid-lovers. It is as yet rare, though other importations are probable, its distinct form giving it value for hybridizing. It is a strong-growing and free-flowering plant, which should be grown with the East Indian orchids, the growths being ripened in an intermediate house when mature.

W. HACKETT.

Kew.

LILYWORTS.—No tribes of flowers have had so great, so varied, or so healthy an influence on man as this great group of Lilyworts, depending not so much on the whiteness of some of their blossoms or the radiance of others, as on the strength and delicacy of the substance of their petals, enabling them to take forms of faultless elastic curvature, either in cups, as the Crocus, or expanding bells as the true Lily, or Heath-like bells as the Hyacinth, or bright and perfect stars like the Star of Bethlehem, or where they are affected by the strange reflex of the serpent nature, which forms the labiate group of all flowers, closing into forms of exquisitely fantastic symmetry in the *Gladiolus*. Put by their side their Nereid sisters, the Water Lilies, and you have in them the origin of the loveliest forms of ornamental design, and the most powerful floral myths yet recognised among human spirits, born by the streams of Ganges, Nile, Arno, and Avon. For, consider a little what each of those five tribes has been to the spirit of man. First, in their nobleness, the Lilies gave the Lily of the Annunciation; the Asphodels, the flower of the Elysian fields; the Irids, the fleur-de-lys of chivalry; and the Amaryllids, Christ's Lily of the field; while the Rush, trodden always under foot, became the emblem of humility. Then take each of the tribes, and consider the extent of their lower influence. Perdita's "The Crown Imperial, Lilies of all kinds," are the first tribe, which, giving the type of perfect purity in the Madonna's Lily, have, by their lovely form, influenced the entire decorative design of Italian sacred art; while ornaments of war were continually enriched by the curves of the triple petal of the Florentine "giglio" and French fleur-de-lys; so that it is impossible to count their influence for good in the Middle Ages, partly as a symbol of womanly character, and partly of the utmost brightness and refinement of chivalry in the city, which was the flower of cities.—J. RUSKIN.

* With coloured plate from a drawing by H. G. Moon at Kew.

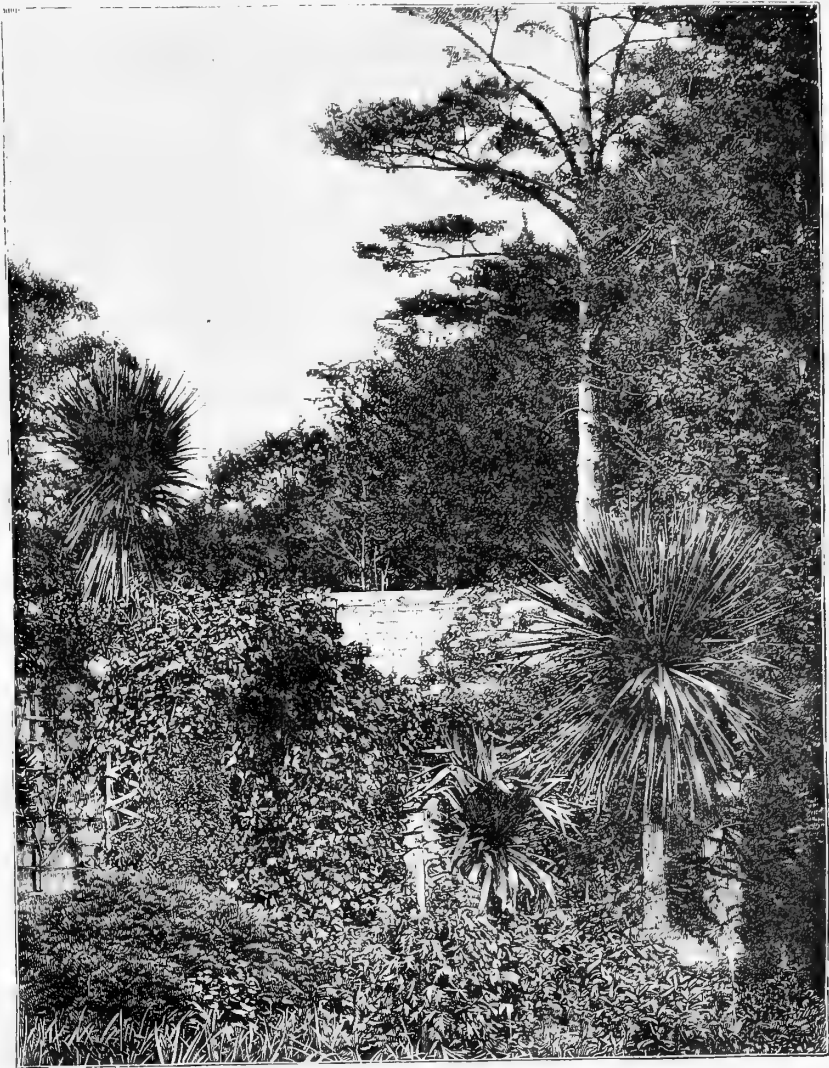


CYMBIDIUM BULL. & ROLFE

THE HARDIER CORDYLINES.

WHEREVER conditions are favourable to them in the open there are few plants more effective in gardens than the Cordyline or Club-Palm. Upon sheltered spots of the southern coast, from Hastings and Worthing to the Isle of Wight, throughout the south-west of England, and in many parts of Ireland, the Club-Palm grows freely, flowering and ripening seed year after year. The tall straight stem bearing its massive crown of ribbon-leaves, divided it may be into as many as a score or more of different heads, is unlike any other plant, and always suggestive of the tropics. In such mild climates as the warmest parts of England, Ireland, and the South of Europe, there are few things more impressive than a fine cluster, or a winding way, planted with mature plants. They make rapid growth—as much as 15 feet in ten years from seed—in some parts of our own country, and when, after flowering, the trunks branch, their beauty is enhanced. Fine old trees may sometimes be seen on the Riviera, with a much-divided spreading canopy, but foolish gardeners too often cut them down to start afresh before they reach their full growth. A walk which I remember, passing through scores of these plants collected for their beauty and carefully grouped, proved an ideal retreat on a hot day and the best of places for growing a rich variety of climbers. In light rich soil such as it loves, the roots of the Cordyline pierce deep in a long straight pivot, which (in case of removal) should on no account be injured. The surface soil may therefore be freely worked, and the tall bare stems form natural pillars for twining plants, protected overhead by the clustered crowns, which are yet too small to cut off air or sunlight. That walk, with its Solanums and its Cape Plumbago, its showy Hardengerias and Climbing Dahlias, with many beautiful Tropæolums and the glowing

Cantua, toned down with trails of filmy Asparagus and the dainty Eustrephus, was a picture the season through, and, allowing for differences of climate, some adaptation of the idea is not impossible in places where single plants of the Club-Palm are often seen to perfection. Few plants are more easily protected when sharp frost surprises; a twist of one of its own ribbons will secure the crown with the tough outer leaves sheltering the more tender core, while an encircling mat



with a lining of straw or litter will keep at bay all but the most piercing frost. Such winter costume may be unsightly, but the beauty of the plant is worth this safeguard in places where it cannot be trusted to do without. In plants raised from seed there occur endless variations in texture, length and width of leaf, in habit, and, more rarely, in colour. The commonest colour variety shows a slightly glaucous green, but the veins are often more or less

coloured red, which sometimes spreads to the entire leaf. A grower at Hyères, some years ago, raised a batch of young *Cordylines* of a deep claret-red, very fine in contrast with the common form, and apparently retaining their beauty of colour. The pick of the batch were secured for one garden; but a few fine plants of this deep red strain may still be found, though many intermediate forms offered under the same name, but in which the colouring is feeble, are not worth growing. There is also a scarce dwarf form of the hardy Club-Palm which, even under glass, never rises higher than a few feet, spreading into a dense much-branched mass which, as regards habit, has more in common with certain *Yuccas* than with the bare-stemmed *Cordyline australis*. Its leaves, borne in rounded compact heads, are short, leathery, and rather rigid; it is very hardy, plants passing the winter uninjured in the rock-garden at Kew, and at Veitch's nursery, Coombe Wood. It is, however, a rare plant, and has, so far, never flowered, differing in this particular from the common form, which does not break into heads until it has flowered. Until it has done so its precise status is in doubt, little being known of it save as a native of New Zealand, where the forms of *Cordyline* are so many and interblending that names are much confused. It may not improbably prove to be a mountain form to which increase by offsets is more natural than seed-bearing. Though rarely hardy enough for growth in gardens, there are two or three other kinds which do well in the warmest parts of the country, and are therefore given place in our brief descriptions.

COMMON CLUB-PALM (*Cordyline australis*).—A plant well-known for its stately growth in warm and sheltered spots of our southern coastlands, and well seen in many parts of Ireland. In New Zealand it sometimes reaches a height of 40 feet either as a single stem or branched; in this country it rarely much exceeds 20 feet, though a very tall unbranched plant is growing in the Temperate House at Kew. Strong plants bloom freely, bearing as many as a score dense clusters of sweet starry flowers in which insects delight. In fine seasons these are followed by berries of a pretty bluish-white, changing to dusky pink and brown before ripening; in warm countries the

blue colour is more decided and very ornamental. Plants are easily raised from this seed, or from sections of the stem or thick white roots in gentle heat. Amongst the Maories these roots are used as food. In placing young plants outside damp is more to be feared than frost, and it is well to plant in a dry spot, raising a mound of ashes at the base of the stem during winter. Variations in leaf and habit are many, but few are named; amongst the most marked is a form in which the darker green leaves are suffused with red at the base, the colour mounting the leaf by the midrib. There are also several variegated kinds too tender for use in the open, and the dwarf and copper-leaved varieties just noticed.

BANKS' CLUB-PALM (*C. Banksii*).—A scarce plant confined to a few of the most sheltered gardens in the country, and remarkable in appearance by reason of its great length of leaf. These sometimes reach 6 feet with a maximum width of 2 inches. Its stem is shorter than that of *australis*, and commonly simple but at times sparingly branched. The leaves are further characterised by six to eight veins, running the length of the leaf on either side of the prominent midrib.

NORFOLK ISLAND CLUB-PALM (*C. Baueri*).—A broad-leaved kind of vigorous growth (reaching 40 feet) and a native of Norfolk Island. It is very handsome, especially when branched, but though used for summer effect is too tender to stand a winter in the open.

THE BROAD-LEAVED CLUB-PALM (*C. indivisa*).—The finest plant among the cool-grown *Cordylines*, but rarely seen in its best forms and often quite wrongly named through the confusion between this and forms of the Common Club-Palm. It is difficult to grow in pots, the roots getting out of health in winter without great care, but it is far more easily kept when planted out in the open where that is possible without risk, or under glass in colder districts. Once seen in its true character it is impossible to mistake it for the commoner kind; its forms are, however, very variable in length, and especially in width of leaf and in the shading of the leaf-veins, which in some varieties are richly coloured. Its broad pendant leaves taper far more than in *australis*, and are often of a peculiar bluish or glaucous green; one form shows a dark green with

veins and ribs of deep brown. It was first introduced from New Zealand some half-century since, but is rare from its proving in general so short-lived. Its fine foliage is a feature in the vegetation of its native country, where it forms unbranched stems some 20 feet high, growing freely even in the lower mountain regions, and valued by the natives for its fibre. In this country it is only grown in the open with success in the mildest parts of our shorelands, fine plants occurring here and there in gardens of the south-west. It flowers more rarely than the Common Club-Palm, bearing a dense pendant cone-like cluster of small sweet flowers which ripen seed in a good season. There are many forms of this plant, the finest bearing leaves nearly 6 inches wide of the most graceful habit. The named varieties include *atropurpurea*, a broad-leaved form with the base of the leaves and the lower midrib of a deep purple; *lineata*, with leaves 4 inches or more wide, and the leaf-bases red and pink; *Veitchii*, with narrower leaves and veins, and leaf-bases of deep reddish-crimson; *Dalliereana*, the leaves of which are striped with yellow; and *vera*, a wild variety and the finest form of all. Its leaves are 2 to 5 feet long, very thick, leathery, and resistant, of dark shining green, and sometimes reaching a width of 6 inches. It is of dwarf habit, and frequently shows a rich orange or crimson shading in its veins and midribs. Fine specimens of this beautiful form are grown at Trescoe Abbey, Menabilly, and similarly sheltered spots.

[To the Editor of FLORA AND SYLVA.] SIR, —Adverting to the article by Mr. S. W. Fitzherbert in your December number on *Rosa levigata*, and his statement that he has never known *R. gigantea* to flower, I would refer you to the Rose Catalogue of Messrs. Paul and Son, issued last autumn, in which they state, in reference to the latter rose: "Has at last been flowered at Cannes by Lord Brougham, who describes it to us as golden yellow in the bud, open flowers lemon-white." I do not know whether this is of any interest to you.—Yours faithfully, G. L. LEMAN.

As for our love of gardens, it is the last refuge of art in the minds and souls of many Englishmen: if we did not care for gardens, I hardly know what in the way of beauty we should care for.—SIR ARTHUR HELPS.

ROCK ROSES (*Cistus*).

ANYONE who has become familiar with the *Cistus*, or Rock Rose, in its native haunts is glad to meet it again, for even under duller skies it seems to possess a brightness all its own—a reflection, as it were, of clear strong sunlight drunk in by endless successions of its fellows through countless ages of time—a suggestion of humming insects, of soft winds and genial warmth, and, above all, of wild, unrestrained Nature. These are, indeed, shrubs of the wild-garden, some of Nature's wayward children, which resent the fussing and trimming of the gardener, and love to take their own way in places despised of other plants. In its own haunts no soil is too poor for the *Cistus*, the drier and more sunburnt the better, provided that it is fairly porous. Spread over a wide range of sunny hillsides all over the Mediterranean region, and producing myriads of its short-lived flowers and stout seed-vessels, the only wonder is not to find it yet more freely. In that magnificent seed-producing



CISTUS FLORENTINUS.

region, however, where produce rarely fails to ripen, Nature has adopted special means to preserve the balance, in the myriads of harvesting-ants which garner the surplus stores of autumn, and in diverting them to their own



CISTUS LADANIFERUS.

needs, prevent useless reproduction. These ants are specially numerous in the warm light soils loved of the Rock Rose, and much of their lavish produce is thus diverted when the rough winds of early autumn scatter broadcast the seeds ripened during the preceding summer. The seeds are round and smooth, and roll in all directions down the rocky banks, until, finding some chink in the soil, often in the crumbling rock itself, it lies hidden until rain allows of germination. Thrusting upwards from its retreat a few leathery leaves, and pushing downwards its hair-like rootlets into the veins or crannies of the rock beneath, it pushes and thrusts, slowly at first, but then rapidly, till its root-stock is hard and woody, and tapered like a wedge (which indeed it is), and, firmly established, it can defy sun, rain, and wind. Anyone who wishes to make use of these lovely shrubs must bear in mind these conditions and as nearly as may be reproduce them. But the Rock Rose has here to face a degree of cold to which it is normally unused, and for which it is ill-prepared by our damp autumn days, and herein lies the element of uncertainty which has prevented its more general use in gardens.

Still, anyone who has seen what the *Cistus* can do, at Kew and other places in which it is understood, will not find it unworthy of a place in any garden in which suitable conditions exist. An idea of its beauty when massed and

allowed to spread naturally may be gathered from our illustration, taken from one of the sunny dells at Kew. These plants are on a bank, dry and fully exposed to the sun, but sheltered from cold winds by the trend of the ground and a belt of evergreens, and these conditions are as good as could be found. It is better not to mix them with other things but plant bold masses and leave them to ramble at will, for they spread naturally to catch as much sunlight as possible, and the presence of other plants makes them drawn and unfitted to resist bad weather. A sheltered place in the wild garden suits them to perfection when strong enough to plant

out, for though it might be quite worth while to try scattering a few seed broadcast, one can only rely on seedlings raised and tended like those of other shrubs in their early stages, and it is always as well to keep a few plants in reserve in case of losses during the winter. They may be increased from cuttings for the choice varieties, from side-shoots taken off and rooted under hand-lights in the early autumn; but to use seed, easily obtained from the great dealers, and sown in spring, is the simplest way. Where there is no ready-made spot at hand, a plan followed with good results is to throw up a bank of light soil in the shelter of a wall, or of evergreens so placed as to protect while not casting shade, allowing at the same time ample drainage, and if a few bold masses and slabs of rough stone be half buried in the mass, so much the better. The plants should be grouped as naturally as possible around and amongst these boulders, which aid drainage and absorb a great deal of heat during summer, and then left alone, pinching or training being quite unnecessary. During very severe weather they will need some protection. This is best given, not by muffling up the plants, which are always injured by lack

of air and exposure, but by some light covering, stretched on a framework to be lifted on and off and used only in sharp weather. There is a good deal of difference in the relative hardiness of the species, and still more in their duration, some kinds growing well and improving each season during many years, while others, even when not damaged by frost, need renewal after a short term of life. In the south of France the *Cistus* is often attacked by a peculiar root-parasite, the *Cistus*-rape, a quaint leafless plant like a fungus in growth and appearance, and orange-yellow or sometimes bright red in colour, with a peculiar smell. Many species of *Cistus* produce a clammy gum upon their leaves and stems which, in parts of the East, is gathered by beating them with a sort of flail, the thick gummy juice being scraped off and made into a fragrant resin. Bees are exceedingly fond of the Rock Rose, and during the dry season in the south when many other flowers fail, they are one of their chief resources; this probably accounts also for the many natural hybrids known to botanists. Many of these, though bearing distinctive names, are too much alike to be of use in gardens. There are, however, two or three species of *Helianthemum*, which, if botanically distinct, are so nearly allied, and so like these plants in appearance and needs, that they should be grown together for their peculiar beauty of colour, which is not represented in the *Cistus* proper. Omitting doubtful names and uninteresting kinds, the best and most distinct sorts are as follows:—

VARIETIES.—*Cistus albidus*, hoary grey foliage and pale purple flowers; *candidissimus*, silvery-white leaves and pale rose-coloured flowers, a big grower from the Canaries; *corbariensis*, a natural cross between *populifolius* and *salvifolius*, bearing white flowers; *crispus*, a handsome species with trailing branches and ruddy-purple flowers, but difficult to keep as being from the warmest parts of Europe; *cyprius*, hoary leaves and crowded white flowers with a dark spot on each petal, Cyprus; *florentinus*, a cross between *salvifolius* and *monspeliensis*, a good grower,

very hardy, forming a dense spreading bush with medium-sized white flowers; *hirsutus*, a low grower, with oblong hairy leaves, flowers white with yellow blotches; *ladanifero-monspeliensis*, very large white flowers, one of the finest; *ladaniferus*, the finest of the genus, reaching 6 to 8 feet, but usually 4 to 5, with very large white flowers bearing a bold crimson blotch at the base of each petal, leaves and stems very clammy (whence its name Gum *Cistus*), the former large and long, deep green above but silvery-white below, in itself an easy means of knowing this plant, the best and one of the hardiest; *laurifolius*, from France, a big grower, very hardy and lasting for many years, with a good habit, and abundant white flowers of large size throughout the summer, one of the easiest to grow; *longifolius*, a natural cross believed to be between *populifolius* and *monspeliensis*, white flowers marked with yellow; *lusitanicus*, a good plant of garden origin, growing quickly into a shapely bush bearing large white flowers with crimson spots and narrow bright green foliage slightly viscous; *monspeliensis*, variable in habit according to soil and position, medium-sized white flowers and dense clammy foliage; *parviflorus*, a low spreading shrub with small white flowers; *populifolius*, with broad leaves and white flowers, blooming earlier than most; *purpureus*, a very good



HELIANTHEMUM FORMOSUM.

kind, with neat erect habit, pale green foliage and reddish stems, the leaves often taking the same tinge especially towards autumn, very large flowers of reddish-purple with darker

spots at the base of each petal, continued in succession quite to the end of summer, Levant; *recognitus*, a pretty low-growing species, later to flower than most kinds, bearing medium-sized blooms spotted with crimson at the base, a cross between *laurifolius* and *monspeliensis*; *salvifolius*, flowers white and stalks and leaves hairy—of this there are several forms; *tauricus*, from the Crimea; *vaginatus*, a hairy plant with distinct foliage and early flowering, the flowers in bunches of a rich rose-colour, Teneriffe; *villosus*, also in many forms, foliage more or less hoary and closely set forming a dense bush, flowers crimson-purple in varying shades, a widely-spread species. *Helianthemums alyssoides*, *formosum*, and *halimifolium* are closely allied plants, bearing fine golden flowers with bold black markings; they should be grouped with the *Cistus* for their variety in colour.

B.

THE PAMPAS GRASSES.

PLANT-NAMES have to fall into line with all things else in the law of mutation: still it is a little confusing to find the old *Gynerium* transformed into *Cortaderia*, however well founded the botanical distinction may be. And here comes in the value of such English names as Pampas Grass, which are everywhere understood and are permanent additions to our tongue. The old group of *Gynerium* is divided into two parts—that of *Gynerium*, containing some eight species with which English gardens have little to do; and *Cortaderia*, a group of some four or five kinds to which belong the Pampas Grasses of southern gardens. The only form of *Gynerium* with which English people are familiar are the dried and coloured plumes of *G. saccharoides*, sold under the name of Uva Grass. The plant itself is common over tropical America as a tall Reed-like grass thriving beside water, and grown here as a stove aquatic. It is a handsome plant with broad bold leaves and plumes drooping to one side upon stems of 12 to 15 feet high, but it is little seen save in botanical gardens. With it is also placed *G. arcuato-nebulosum*, a plant bearing enormous plumes of great beauty, but beyond these dried flowers little is yet known of its character or native country. With the Pampas Grasses our gardens have long been familiar, the new name being taken from a local Spanish phrase mean-

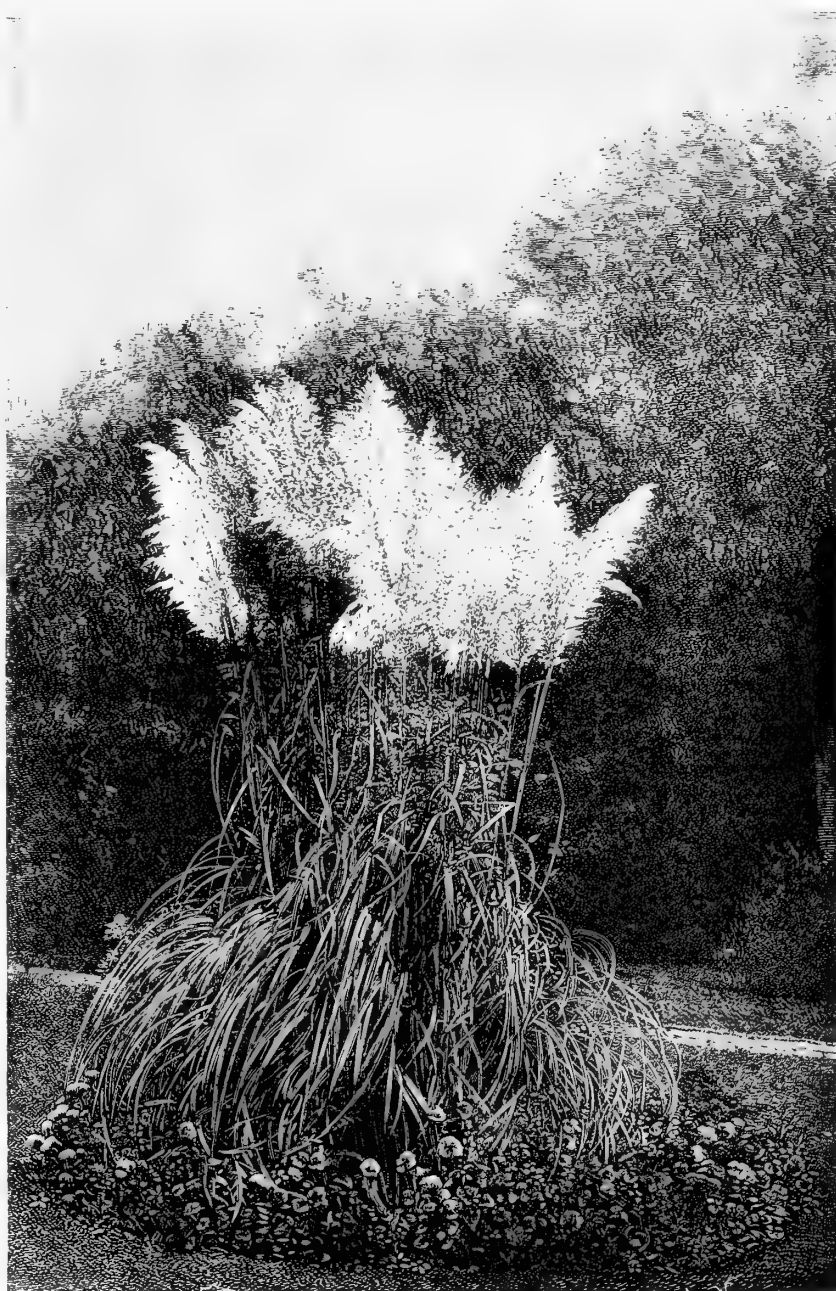
ing “the plants that cut;” few who have handled the plants will deny its aptness. The various species are widely spread over the whole of South America, and are very variable as to form, height, and beauty, even within a small area. Those given rank as species are *C. argentea*, or the common white Pampas Grass of gardens, found beside watercourses over central South America on the table-lands of the Cordilleras; *C. araucana*, found generally further to the south, and described as a beautiful plant with slender plumes shining with silvery lustre; *C. speciosa* is a form prevailing in Chili and Bolivia; *C. rudiuscula* from Chili eastward to the Argentine Republic—this a dwarf form of neat compact habit, with slender plumes; and *C. Quila* or *jubatum*, the Rosy Pampas Grass of gardens, for the coloured forms are now all held to belong to this most variable species.

In English gardens, however, the only kinds met with are *C. argentea* and *jubatum*, both of which exist in a number of seedling forms with a wide range of habit, height, and beauty of spike. Though found growing at a considerable height in their native mountains, the Pampas Grass is not thoroughly hardy in England, being injured or dying outright in many districts during severe winters, and hence it is, perhaps, less used than was once the case in gardens, though along the southern coasts fine tufts are common enough, and in the south-west it attains full beauty. It is one of those plants whose appearance is almost suggestive of the waterside, and in mild districts it does well enough beside water, where it revels in the moisture during summer; in many cases, however, these spots are the worst for it in winter, and without protection it often comes to harm. Where a trickle of water can be found for it the plant is far better upon a sheltered hillside, and is thus often seen to great advantage and is far safer from frost. Around many of the towns of the Riviera it has established itself as a wild plant just in this way, creeping down the sides of such tiny streamlets as trickle from the hills, and making fine tufts in the shelter of the woods. Once in the plain it would have no chance beside the giant Reeds (*Arundo*) of the country. A fairly moist spot in deep soil, with full sunlight and shelter from rough winds is what best suits the Pampas Grass; it planted beside water and in valleys, the plant

should be protected by branches, litter, or dry fern, during severe weather. Late spring is the best time for planting or dividing old plants; all are much better also for being cut in rather closely when risk of frost is over. To see the Pampas Grass at its best the ground should be well prepared before planting, for the roots are thick and run deep, and a fine mass should not be disturbed for many years. A deep soil, well enriched with rotten manure, does away also with much of the need for watering, even in dry ground such as favours a graceful habit and freedom of flower. In damp soils the growth becomes rank, the plumes often scanty and liable to discolour, easily broken by wind, and the whole plant less hardy. The plants are male and female, and vary in beauty and in habit with their sex; with a little care it is not difficult to tell them apart, and for beauty in the flower garden the female should be preferred. Though less vigorous in growth, its habit is more graceful, the leaves shorter and arching prettily on all sides, with a more compact base; it comes sooner to flower, while its plumes are more handsome, free of stamens, and last better when dried. The male plant, being a strong grower, does very well for distant effect such as upon exposed banks in the rougher parts of the pleasure grounds or near water. Its leaves are broader with a prominent whitish midrib, a rougher appearance, and a less refined outline, often broken by lateral growths or by splitting of the base into separate tufts. A female plant of one of the compact sorts now grown, well planted in deep, rich soil, in an open but sheltered spot, soon becomes a handsome object, with its dense arching leaves as a fountain of verdure, crowned in early autumn with its many shafts of flower, the whole from 4 to 5 feet in height. For a

place on the lawn or the kept garden this is high enough, and its beauty is far more lasting than that of the older, tall-growing kinds, which are best used for more distant effect and grouping.

The rosy form of Pampas Grass is still rare in English gardens, though far commoner in



France, where most of the named kinds have been raised. It comes from Ecuador and the region of the great peaks of the Andes, being found in company with the white kind at a height of 6,000 to 10,000 feet. As seen in gardens the plant varies much in merit, but is no less variable in its native uplands, where, according to André, good plants are rare, and

seedlings often reproduce these poor forms. At its best it is a beautiful plant, distinct from *C. argenteum*, with long leaves of deeper green and a graceful sweep, smoother also at the edges and so less dangerous to handle. The flower-spikes of silky texture are larger and more graceful than in the White kind, with drooping feathery plumes hung so loosely that they tremble in the wind, and when newly expanded shine with a silvery lustre. Their colour varies from a pale purplish grey to a decided rose, which is quite pronounced in some of the newer forms. These kinds mostly bloom a few weeks earlier than the common kind, their flowers appearing towards the end of summer and keeping their beauty longer than the sorts which hardly open before the storms of autumn are upon them. In fine seasons they will sometimes bloom a second time, but this is exceptional. Beautiful, whether for its own merit or in contrast with the pale-flowered kinds, the rosy form of Pampas Grass is worth a place in gardens which its older form has now so long adorned.

Young plants are mostly grown from divisions; seedlings, though more graceful in habit, cannot be relied upon for beauty of flower. When it is desired to gather the Pampas plumes for decoration, they should be cut when quite dry, just as they are about to expand, and then gently shaken out of their protecting sheaths before an ardent fire. If this is done slowly and carefully they lose none of their beauty, and last far longer than when left to open in the usual way. Both the white and rosy forms are grown in many garden varieties, the best of which are as follows:—

WHITE PLUMED KINDS.—These vary greatly in size and beauty, from dwarf forms of 4 to 5 feet, to those reaching a height of 14 or 15 feet when in rich soil. Many of the finest forms exist in private gardens as unnamed seedlings, but amongst named kinds *elegans* is a tall, free-growing plant, coming to bloom in advance of most, its plumes falling apart, as they expand, in a very pretty way. *Bertini* is quite a dwarf variety, with a graceful habit and free in flower. One of the finest is *Marabout*, a medium grower with rather close club-shaped plumes of great length, falling slightly apart when mature. *Soyeux* is a French seedling, rather like the last but taller, and with dense silky plumes. *Monstruosus* is not very tall, but a vigorous kind,

bearing plumes of the largest size and of a good clear white.

ROSY PLUMED FORMS.—These are mainly French seedlings, and include *carmineum Rendatlerii*, a neat grower, the earliest to flower, and free with its pretty plumes of pale pink, sometimes coming a little one-sided. One of the brightest in colour is *Gloire de Museum*, a taller grower, with drooping feathery plumes. *Louise Carrière* bears very large spikes and is the deepest in colour, combined with free robust growth. *Roi de Roses* is a smaller form, not very distinct. The one fault of these red forms is that they tarnish quickly in bad weather, and lose much of their interest.

There are several kinds the leaves of which are ribboned with white or yellow, of which *Wesserlingii* is the most robust, and *aureo-lineata* the most graceful; but being tender and lacking in vigour, they are of small interest for gardens. There are, however, distinct forms to be met with in gardens, bearing plumes coloured with green or yellow, and in respect to one of these Mr. Smith of Newry (who grows a fine collection of these plants) writes us:—"The most distinct form I have seen recently is a green-plumed kind with long tapering spikes, of which there are several large clumps in the gardens of Belvoir Park near Belfast; though not showy, it attracts." These green and golden-plumed kinds may also be seen here and there upon the Continent, but so far do not seem to have come to the notice of the trade.

THE WHITE AGAPANTHUS.—I notice that in the article on the Agapanthus, which appeared in the November number of FLORA AND SYLVA, all the forms are treated as varieties of *A. umbellatus*. Nicholson, in his "Dictionary of Gardening," also recognises only one species; but, surely, the deciduous white-flowered Agapanthus may be considered a species distinct from the evergreen type. Here both do well in the open, growing on a steep, grassy slope of light soil, dust-dry in hot summers. The clumps of the common blue are over 4 feet across, and flower splendidly, and, although the more lately-planted white has not as yet reached equal size, it is quite as satisfactory. The leaves of the white are shorter than those of the blue and less than half their width, while the white flowers are produced much earlier. The flower-spikes of the white are also considerably taller and the individual blooms less densely clustered. There is another white form that is evidently only a variety of *A. umbellatus*, as it is identical with this in all points and is evergreen.—S. W. FITZHERBERT.

THE LOMBARDY POPLAR.

No tree that ever came to England has had greater vogue than this in past times, although of late years the undeserved planting of the Californian conifers has caused it and others to be less

planted. Many trees of it are diseased, especially where the situation is not well chosen for them. In the old books there was much said as to what the Lombardy Poplar was, but there is little doubt now of its being a variety of the Black Poplar (*Populus nigra*), and, like all varieties of trees, inferior to the wild tree in health and vigour. Varieties of trees are often curious and distinct, but we cannot expect them to attain to the dignity of the wild tree. The Lombardy Poplar is a great tree in the Italian valleys like those of Aosta, and there it attains a noble vigour, as it does, indeed, in our own valley, for the good soil beside the river is the best for it. Of late years another handsome upright Poplar (*P. Bolleana*) has come into cultivation, which looks like a variety of the White Poplar, but it is said to be wild in parts of

Asia, much the same as the Lombardy Poplar is said to be in Asia Minor. It is not unlikely that, struck by the distinct habit of these trees as making them more fitted for planting near roads and by streams, they may have been attractive

to planters by their form, and so have become more widely spread.

In any case their interest to us depends on their value in cultivation, and we shall never get their full beauty unless we plant them in valley soils near



LOMBARDY POPLARS BY MILL POND, KENNET VALLEY.

streams and rivers, which usually have good soil beside them. In the north of England and in Scotland the Lombardy Poplar does not thrive, but in valleys of the midland counties fine trees may be seen, particularly in Oxfordshire, where

some of the oldest trees in England are still standing. It is not a long-lived tree, its wood starting to decay almost as soon as mature, though it often reaches a height of 100 to 120 feet. As in all Poplars the sexes are apart, but the female form of the Lombardy Poplar is so rare that only occasional specimens are found amongst thousands of the male trees; in northern Italy it is more frequent, but is nowhere common. The trees are mainly planted beside roads to form avenues, or near water in contrast to trees of low and spreading form, and so planted their growth is seen at its best, and is striking and beautiful. For avenues, though their growth is rapid and so regular as to form vistas of great effect, the trees become dangerous when old, and their branches so brittle as to prove a frequent cause of accident. At the same time, from their compressed form of growth, it is possible to plant many trees in a small space, and their light shade is not so harmful to surrounding growth as that of denser trees, but the long roots run far and exhaust the soil for some distance around, not infrequently throwing suckers.

In the centre of Europe the Lombardy Poplar is as striking a feature in the landscape as is the Eastern Cypress upon the shores of the Mediterranean. In many parts of France, Germany, and the centre of Europe it is seen in avenues of great length. In many parts of the Rhone Valley the approach to well-nigh every town and village is flanked by its avenue of Lombardy Poplars, often of great beauty and height, their deeply-furrowed trunks giving a fine buttressed

effect with age. For many miles of its course the River Po is bordered by lines of these trees; indeed, it is so plentiful throughout northern Italy as to give a distinct effect to the entire landscape.

SINGLE CHRYSANTHEMUMS.

IN such a season as that just passed Chrysanthemum lovers have had reason to bewail their losses from damp and mildew amongst plants of the large-flowered classes of Japanese and incurved forms. The single-flowered kinds alone have escaped, and this is one more good reason for growing them in larger quantity. For light effect in decoration they are best of all, lasting fresh for weeks, and looking better in artificial light than heavier flowers. There is now, too, a good choice of kinds, giving a long season of bloom and much variety in form and colour. The newer kinds of to-day are better than the older ones, in which the yellow disc was often ill-defined and partly hidden by distorted petals, or the habit faulty. Seedlings have now no chance, except with good habit and clear, distinct outline. It is not many years since Mr. Wells, of Earlswood, was taken to task for wasting his efforts upon single forms, but to-day there is a demand for these plants second only in importance to the Japanese section. Visitors often turn with something of relief from the beautiful but heavy show-flower to the elegance of its daisy-like form. Another great merit of these is, that many a grower that can ill spare room under glass for the more tender kinds may yet, thanks to their hardiness, enjoy the singles in the open air,

the more so if some light shelter is arranged toward off beating rains. In this way they follow and prolong the season of the early-flowered kinds, until hard frost cuts them down. The collection of single Chrysanthemums-flowered at Earlswood includes all the best older kinds and a number of seedlings under trial; white and cream flowers are, as

flower, as grown by Mr. Wells and several times shown at the Drill Hall, is *Lady Marguerite Douglas*, a large bloom, very pure and well formed yet not too formal, with just enough substance for beauty without heaviness. It comes very large for a single when disbudded, and is a most attractive flower. *Coronation*, as its name implies, is an



CHRYSANTHEMUM, "CORONATION." (Engraved for "Flora.")

usual, commonest amongst these new kinds, but there are good flowers of other colours, and for ease of reference there is, perhaps, no better method of classing them.

Of these ever-useful whites there is a large choice, giving much variation in habit, size, and time of flower. A good new

*White-flowered
Kinds.*

older kind but good and distinct, of sturdy, dwarf habit and good foliage; it is best disbudded, but not too closely, letting plenty of buds develop. A good idea of the mature flower is conveyed by our engraving, the broad incurving petals and the large greenish centre, which so admirably sets off the purity of a flower, being well shown. The

later flowers are of a pale blush colour, becoming deeper as they mature. Returning to the new flowers, *Gwladys* is a pretty variety of a useful size for cutting, coming upon long stems in loose heads which are more graceful than denser clusters. The long narrow petals are tapering and reflexed, a characteristic becoming more marked as the flowers mature; its one fault is a rather weak habit, which spoils it as a pot plant but not for cutting. *Leslie*, another seedling, shows a distinct tinge of pink in flowers, which are large, rather flat, and regular, of good substance, and pretty as a spray, while *Eva Shaw* is almost identical save in the purity of its whiteness. A dainty little flower is *Lady Daisy*, a favourite with the ladies, effective in the cluster, and, being small and early, useful for table and light decoration. Yet another seedling, *Mac*, is not so remarkable in appearance, though a good plant of fine dwarf habit for pots, but the flowers are fragrant, especially towards evening. Other new kinds are *Cecil Denyer*, of a shade of cream or pale primrose, which singles it out at once from the white flowers; and *Wyndham*, a rather later sort with blossoms also of a rich cream colour. Amongst the older single white kinds *Earlswood Glory* is still to the fore, a plant of dwarf habit bearing large flowers of a pure white, the broad florets contrasted with a bold green eye; as a mid and later-season flower there are few better. A flower unlike any other is *Star of Honour*, also a good dwarf plant not exceeding 3 feet, its small flowers, coming early, with very light narrow petals diverging pret-

tily, and effective by artificial light. For late cutting two of the best single whites are *Mrs. Brown Potter*, a flower which can be relied upon until the end of December, and *Christmas Cheer*, a small flower in large clustered sprays, whose name tells of its endurance.

Good novelties in this section are welcome but not always to be had, particularly in bright tones, which look well by artificial light. Blush tints are more frequent, and among them is *Edith Pagram*, raised by Mr. Pagram, of Weybridge, Surrey, a pretty flower in pink and white, its colour deepening with age. In sprays this is rather disappointing, but gives far better results when thinned, coming then as a pleasing flower of nearly 5 inches across. *Tollie Carey*, however, is good in sprays, a pretty flower of bright pink on long rigid stems which show to the best advantage its feathery petals; in pink flowers this is a gain. In blush tones *Mrs. E. Roberts*, an older kind, is very useful in clusters of large size, which are almost too dense when not somewhat thinned; broad petals with rounded tips are contrasted with a bold yellow disk. A distinct variety in its intense magenta-pink is *Mrs. C. Behrens*, a very dwarf grower and early to flower, the contrast between the bright petals and the greenish-yellow centre heightened by a ring of white round the disk. Good also is *Mrs. R. J. Lockhart*, a fine bloom in dark crimson touched and shaded very prettily with gold, the flowers carried in those loose clusters which are best for effect. *Annie Tweed*, a smaller

*Pink and Crimson
Flowers.*

flower, also in dark crimson, is dwarf and early, its deep tones relieved by a rank of narrow petals in a lighter shade. Perhaps one of the prettiest in this section is *Nora*, a flower in bright soft pink with a white zone round the centre, dwarf and free. *Robert Morgan* is of a deeper rosy-red, a taller grower with flowers, large and free, coming much later. As an early single pink *Lady-smith* is, perhaps, the most useful, good in colour, profuse, and perfect as a bush plant. It often begins to bloom in the open, and should be grown as cool as possible; it then blooms early in October with a profusion of bright pink clusters. Good shades of colour are shown in *Mrs. D. B. Crane*, pink, inclining to cerise, and *Miss Brown*, a rather tall grower, with flowers of a tender rosy-salmon, having an inner zone of white; while a distinct kind of dainty appearance is *Ellen Smailes*, with long tubular petals finely diverging like the spokes of a wheel, of good size, and white shaded pink. For cutting, either singly or in sprays, this is light and feathery. Some promising kinds raised by Mr. Wells, are *Linton*, late in flower, and an uncommon blend of blush colour on cream; it is a flower of good form upon long stems, reflexed when mature, good in the centre, and pretty from its earliest stages. Another blush-coloured seedling is *Harold Shaw*, a flower composed of long narrow petals, lightly twisted, and set widely. Old kinds, useful when colour is wanted, are *Rose Pink*, a flower of good size and form when thinned; *D. Windsor*, in a pretty shade of chestnut-red; *Magenta*, a taller plant with

a silvery inner zone around the disk; *Felix*, bearing large clusters of bronzed-crimson; *Bertha Jinks*, a small light flower on plants very dwarf and free; and *May Jeal*, old but always good.

Though with no very novel features, Mr. Wells has some good yellow seedlings which will be heard

*Yellow-Flowered
Kinds.*

of again. One of the best is *Kitty Bourne*, which gained an award of merit from the Royal Horticultural Society in November; it bears bright flowers of rich yellow on plants of regular growth. *Edith Owen*, another good yellow, is of medium size with a tinge of green in the heart, and stalks so long and wiry that, though in clusters of five and six, they are held wide apart, giving cut sprays a fine appearance. *Miss Lorna Bunyard*, also new, bears large flowers with a prominent eye and coming rather early; while *Dorothy Speller*, also early, is of a good clear yellow. *Nonin's Single Yellow* is a French seedling, which is distinct and good. The plant is sturdy, of medium height and very free in flowers of light yellow, composed of broad petals sharply tapering and regularly cupped with a pretty effect; it is early, blooming in the open during September and lasting to the end of October. Still another new flower is *Winnie Wells*, of fine dwarf habit and neat foliage, with broad-petalled flowers a trifle small, borne in large but not too crowded sprays. Other sorts are *Eleanor*, like the last in nearly every point save its narrower petals; and *Kitty Forward* a robust plant, deeper in colour, with pointed tips and spreading habit. An older kind, but one of

the best, is *Earlswood Beauty*, a flower of primrose colour with a distinct green disk and slightly drooping petals—quite the best of its shade. *Pretoria* is of deep yellow and showy, with a conspicuous green eye. The small yellow flowers of *Miss A. Holden*, the pretty sport from *Mary Anderson*, are charming in sprays, early, and lasting. Two peculiar flowers are *Le Soleil*, with long tubular florets set as diverging rays, and *Mrs. James Carter*, a flower suggestive of Sweet Sultan; both are a little lacking in colour, but differ in form from all others.

The choice of these mixed shades is not large, but includes a few beautiful flowers. First amongst

*Shaded Yellow
Flowers.*

the seedlings is *Winnie Sherring*, a robust mid-season plant of good habit with flowers well displayed. These are large and show their finest colour when thinned, coming 4 to 5 inches across, with petals of deep orange shaded red beneath, and on the inside towards the centre; if not disbudded the blooms are much paler. *Miss Ina Money*, with large crimson-shaded flowers upon long stems, is good, but should not be closely thinned; its later flowers are finest in colour, the first often coming pure yellow. *Mrs. A. J. Solley* is distinct in its shade of light Indian-red, but the long narrow petals are so flat and stiff as to give it almost an artificial look. Older sorts, in which shades of orange and crimson combine, are *Earlswood Terra-cotta*, a good plant for all purposes, dwarf, and profuse; *Mrs. Baillie*, late in flower and a fine shade of chestnut-red; and *Mrs. Ker-*

monde, a beautiful and strangely-formed flower in which a single row of florets are first narrow and tubular, opening out flat at about half their length with the prettiest effect.

THE BANKSIAN ROSES.

EVEN though under our northern skies the Banksian Roses cannot equal in beauty those of southern Europe, it is possible by careful planting to get results, in many parts of the south and west of England, which make these fine climbers well worth growing. In all but the bleakest situations south of the Thames Valley the yellow Banksian Rose may be expected to bloom freely in normal seasons, and even as far north as the Menai Straits a well-protected plant has not only reached a great size but has flowered well every year. In more northern and colder districts the tenderness of the Banksian Roses make them too uncertain for the open, but they will do well on a back wall and amongst the rafters under glass, and, being very free in growth, may be used for budding other kinds, e.g., *Cloth of Gold*, which so rarely flowers well out of doors, but often blooms abundantly when grafted. One of the most striking collections of Roses I ever saw was composed of a great number of ingrafted branches inserted upon a very long stretch of Banksian Rose used to mask one of the terrace walls so common on the Mediterranean coast. Many of the best kinds in cultivation had been thus brought together and in the height of the season hung in rich clusters with great effect. But the commonest use for Banksian Roses in the south is to ramble over trees, and, for the sake of their beauty in such conditions, some attempt should be made to grow them in this way in quite the warmest parts of our shorelands. In the south of Europe pruning, which with us often helps the ripening of the shoots, is unnecessary; the Rose is planted at the foot of the tree, with no more than an occasional tie to keep it in place until it is fairly started. In due time the first thin shoots appear at the top of the tree, increasing each year in length and vigour, until they dominate all else and fall to the ground in weeping trails covered each spring with myriads of flower-clusters. When

the Yellow Banksian is planted in company with the blue Wistaria, or the white form with some rich red Rose in contrast, the effect is not soon forgotten.

In this country they do best as wall shrubs, and are, indeed, among the best of climbing plants for covering quickly

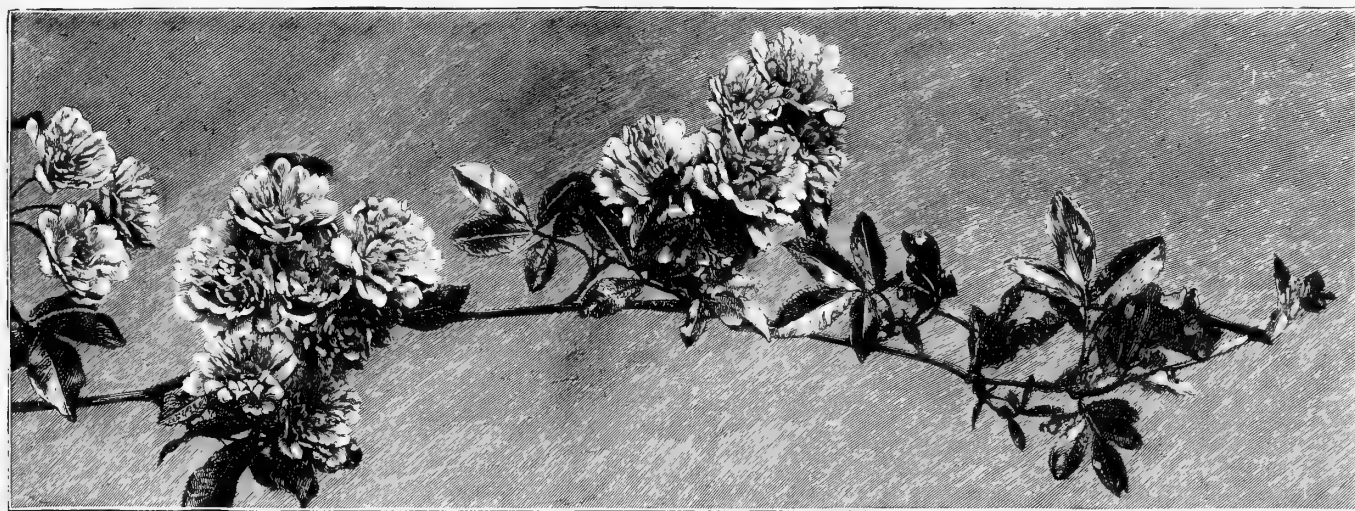
As Wall Shrubs. a wide wall-surface, when sheltered from cold winds.

The front of a house may thus be made very pretty for a while each spring, and the growth of the Rose, though vigorous, is not so dense as to prevent the use of Clematis and other light creepers, which flower at various seasons when the Banksian clusters are over. Other uses for which the Banksians are well adapted are to ramble over porches—some of the finest may

and, to prevent bareness below, one is trained along horizontally near the base of the wall while the other occupies the upper part, but in well-tended plants this precaution often is not necessary. In sharp winters such as recur at uncertain intervals, even old plants are sometimes injured, but when on their own roots (and being easily rooted from layers they should never be planted otherwise) they never fail to grow again even when badly cut.

The most varied directions are given by growers as to pruning, some even advising a barbarous clipping with hedge-shears. In the first place, any pruning that is done must be done in June, immediately the flowers have fallen; and, in the second place,

Pruning.



YELLOW BANKSIAN ROSE.

be seen about a cottage door, summer-houses, and rustic shelters, or the lee-side of a pergola. In districts exposed to late frosts, in the absence of protection it is best not to plant in too sunny a corner, the plants being often coaxed into activity by warm spring days and are then liable to be cut by late frosts. The Banksian Roses, though not particular as to soil, do best in light, warm ground, in which the roots travel easily. As they run far beneath the surface a wide root-run is necessary, which must be well drained but need not be deep. Well planted, one of these robust shrubs will in a few years cover a space 30 feet square, and develop a stem several inches round, of a warm brown colour, from which layers of bark often peel away in long strips. In covering a wide space two plants are sometimes used,

do not prune unless you can help it. In districts rarely exposed to sharp frosts the plants are best left alone, the cutting being confined to dead wood and the spurring back of shoots that cannot well be laid in upon the wall, the growth seldom being so thick as to need thinning. In colder districts more attention is needed, and a little more thinning may ensure ripened wood, but strong growths made during summer should be stopped at intervals and the strength forced into the flowering side-shoots, or the green wood will not ripen before frost comes to spoil it. Careful pinching will almost do away with the need for pruning, and will prevent the stiffness induced by the knife.

Among the varieties of Banksian Rose grown in gardens the best and freest is the

double yellow form. It is more vigorous and hardier than the whites, and its flowers are borne in larger and more numerous clusters. They come in May in long sprays

Varieties.

of flowers about the size of a double Cherry, faintly fragrant, and beautiful when cut, the pretty divided foliage being light and graceful. The small double-flowered white kind also does well in many places and is quite as pretty as the yellow, though not quite so hardy, with foliage of a lighter green, and flowers borne in looser trusses of fewer but more fragrant blossoms, their odour being compared to Violets; one form in which it is more marked is known as *odoratissima*. Fortune's large-flowered Banksian, though a big grower, is not so good, its flowers being less graceful and not so freely produced. The simple-flowered forms of the small Banksians do not seem to be grown in England, though the single yellow is fairly common in the south of France and very pretty in effect. In growth it is not so vigorous as the double kind, and is therefore of less value for English gardens, attractive though it is in form. B.

THE LOCUST TREE (*Robinia*).*

THOUGH old trees in English gardens, which have passed through periods of neglect, the Locust Tree in its many forms is beautiful, and the introduction of new kinds has increased its value. From a planting and landscape-gardening point of view the trees are precious for their fine fresh verdure in summer and autumn, distinct in that way from any trees, and the form of old Locust Trees in groups is very fine, and quite apart from that of other trees. Some of the newer varieties are very little used as yet in planting in our islands, so their values are little known. Hardy and free in most ordinary soils, they are most useful to those who have to plant on poor, dry, and hungry ones where other

trees might starve. Few trees have had to endure more in the way of ill-timed pruning, which destroys their characteristic beauty of outline. The habit of grafting many of these kinds has much to answer for in this respect, for the wood of the Locust Tree snaps easily in rough wind and that often at the point of union; in order to reduce this risk of damaged heads they are often cut in rather closely, although at the loss of much of their beauty and flower. This trimming can easily be avoided, at least in the lower growing kinds, by pinching the young shoots while still tender, at intervals during the summer. This gives but little trouble, and the habit of the plants is improved, with a greater show of flower as the result; for such fragile kinds as the Hairy Locust Tree this way of growing is often the secret of success, and gives a very different result to the usual harsh clipping during winter. Warm light soils are best for all kinds of *Robinia*, though they will grow in almost any ground that is not constantly wet, and they are never finer than in times of drought; but they should not be exposed to rough winds, nor do they grow so freely further north as in the south of England. The common form of *Robinia* is naturalised over a great part of Europe, being very common in France. The four or five species are all from North America as native to the Eastern and Southern States; only one kind is found in the west.

THE ROSE ACACIA (*Robinia hispida*).—For beauty of flower this is the best species, its pendant racemes of rosy-purple flowers freely borne during early summer, in rich contrast

* With coloured plate from a drawing by H. G. Moon at Kew.



FOTHERGILLA NORTII - AMERICAN

to the elegant foliage of a deeper green than is found in the other kinds. It mostly takes the form of a spreading shrub, 6 to 8 feet high, but is often grafted upon tall stems of the common kind—a bad plan, for its branches being very brittle the head is often snapped by rough wind. It should therefore be given a sheltered corner, and is sometimes grown as an espalier or wallshrub as offering the greatest support to the straggling shoots. In its own country it spreads freely from suckers, and, in fact, so rarely

but there are also spineless forms of the plant. In France it is sometimes forced for flower in early spring, the plants being grown in pots for a year beforehand. VARIETIES :—Several garden forms of the Rose Acacia are grown in gardens, but they differ little save in trifling details. *Macrophylla* is the most distinct—robust, free from hairs, larger both in leaf and flower than the wild form, and often preferred to it. *Rosea* is a variety with flowers of a deeper colour lasting long upon the plant;



THE ROSE ACACIA—FLOWER AND LEAF.

bears seed as to have seemingly lost the power ; if on its own roots it is of far greater value as a flowering shrub, the grafted plants rarely living for any length of time. Its growth is free, with large but rather scanty leaves ; the flowers are also large, coming freely during June in bunches that are longer and looser than in other pink kinds, flowering sometimes a second time later in the season. This form may often be known even when bare of leaves by the reddish hairs upon the young growths,

microphylla, a small-leaved shrub with flowers of a lighter rose ; and *nana*, a dwarf form more curious than beautiful. Plants on own roots are to be had, and such should be put in warm or gritty soils.

THE WESTERN LOCUST TREE (*R. neo-mexicana*).—A species which first found its way to Europe in 1887, flowering in Germany four years later. It is the only kind known in the western states, being found sparsely in the valleys of Colorado, New Mexico, and Arizona, as

a spreading shrub, only reaching greater size in one or two restricted areas, where it occurs as a low tree of 20 to 25 feet. It is a hardy, vigorous plant of fine habit, the young shoots, the under-side of the leaves, the flower-stalks, and the seed-pods covered with short brown bristles; the branches bear two spines at each node. Its bluish-green leaves are rather long and gracefully drooping, while the flowers, of a pale rose colour, are carried in short dense clusters towards the end of the summer. It is a useful addition to the group, hardy, and flowering freely when quite small. There is also a form of this plant known as *luxurians*, and coming from the southern Rocky Mountains; it is of larger growth, bearing compound racemes of flower twice during the season. Does not thrive in heavy cold soils.

THE COMMON LOCUST TREE (*R. pseudacacia*).—The fine picturesque form, tender green foliage, and fragrant white flowers of this handsome tree are too familiar to need description. It is of rapid growth, reaching in good soil a height of 70 to 80 feet, with a girth of 15 feet, though such a size is uncommon, the average of mature trees being 60 feet. When once established it spreads rapidly by suckers, which thrive even in the shade of other trees; in this way it has spread over many parts of Europe, its leaves often being used as fodder for cattle. When it can be had of fair size its wood is of value, being very hard and lasting, free from knots, working well, and taking a high polish; for making posts, door and window frames, and similar uses, it is equal to Oak, standing exposure better than most kinds of timber. Growing freely in poor and dry soils and fearless of drought, it is often used to plant on railway banks in the south of Europe, and has even proved its value in fixing shifting sandbanks along the Rhone, Danube, and other rivers. **VARIETIES OF THE LOCUST TREE:**—Its varieties are legion but number amongst them forms distinct and beautiful. Some of these varieties have been successfully raised from cuttings, and others, as Decaisne's, come fairly true from seed, but to save time and trouble in the nursery they are invariably grafted. The Fern-leaved Robinia (*angustifolia*) is a fine leaved form of good growth and very graceful; the Golden Robinia (*aurea*), a plant of good habit and distinct in colour; Besson's Robinia

(*Bessoniana*), forming when young a dense rounded head with large leaves and free of spines, which resists wind and is much used for avenues—grows readily from cuttings; *coluteoides*, a distinct low-growing shrub for rock-gardens; *contorta*, a plant of eccentric habit; *crispa*, with leaves twisted and rolled; Decaisne's Robinia (*Decaisneana*) a beautiful pink-flowered kind, of vigorous growth, free of spines, and flowering later than the type—comes fairly true from seed, which, however, is of uncertain germination; *rubra* and *rosea*, forms of this with flowers of a darker and lighter shade of colour; *fastigiata*, with the erect habit and appearance of the Italian Poplar, one of the most distinct; the Spineless Robinia (*inermis*) with smooth branches in the form of dense rounded heads, and no flowers—a mop-like tree common in suburban gardens; the Mimosa-leaved Robinia (*mimosæfolia*), with finely cut elegant leaves gracefully drooping; the Simple-leaved Robinia (*monophylla*), a distinct tree of robust growth, bearing large leaves, variable in form but often blended into one, which are held longer than in other kinds—good as a shade tree in towns; the Weeping Robinia (*pendula*), of which there are several forms rather stiffly drooping, and differing in their leaves; *pyramidalis*, a tall tree of upright habit; *Rhederi*, a compact rounded bush, grown low for rock-gardens; *Rozynskiana*, of medium growth and spreading branches, remarkable for its immense drooping leaves, at times exceeding 2 feet in length; the Perpetual-flowering Robinia (*semperflorens*), in which the season of flower is prolonged throughout the summer—one of the most useful and distinct; and *Ultriciania*, with branches gracefully drooping.

THE GUMMY LOCUST TREE (*R. viscosa*).—This fine flowering tree is rare even in its native country, and not often met with in gardens though introduced many years ago; this is, perhaps, due to its slower growth and smaller show of bloom than in the commoner kinds. Its height never much exceeds 40 feet, its usual form being that of a large shrub or low tree of 10 to 12 feet high. Well grown, it is a conspicuous and richly tinted plant, fine in leaf and in flower, the colour of which resembles those of Decaisne's Rosy Robinia, but rather lighter in shade and borne in clusters that are

shorter, denser, and held more erect ; there is also a yellowish spot upon the upright petals in contrast to the prevailing pale rose. The flowers appear a little later than in the Common Locust Tree, and are scentless ; in fine seasons it often flowers a second time. Its name is due to the clammy gum with which the branches, and particularly the young growths, are covered ; when out of leaf it may be known by this peculiarity and the reddish-purple colour of its branches. It grows wild amongst the hills of Georgia and Carolina, but is so rare that, until found again within recent years it was believed to have disappeared as a wild tree. There is a form known as *rosea bella* which bears flowers lighter in colour and is free from the gummy secretion of the parent ; it is thought to be of hybrid origin.

HYBRID FORMS.—THE DOUBTFUL LOCUST TREE (*R. dubia*).—This is a fine tree of free growth, reaching a height of 25 or 30 feet, and holding a place intermediate between the Common Locust Tree (*R. pseudacacia*) and the Gummy Robinia (*R. viscosa*) ; it is generally held to be a cross between them. It is a beautiful but scarce kind, bearing during summer and later than either of its supposed parents, loose-drooping bunches of pale rose-coloured flowers, which are sweetly scented. The branches are armed with very short spines, and bear also a few scattered glands, but there is rarely any trace of the clamminess of *viscosa*. The brown seed-pods are thickly set with short prickles.

HOLDT'S LOCUST TREE (*R. Holdti*).—This is a variety newly discovered in Colorado by Mr. von Holdt, and believed to be a cross between the Common Locust Tree and the Western Locust (*R. neo-mexicana*). That this may be the case seems likely in view of a second supposed cross having recently come to light in the nursery of Herr Späth at Berlin, of which he has sent us the following account :—"A plant of the Western Locust Tree flowered in my grounds in 1893, but only one of its seeds grew. Now that this has grown into a sturdy tree some 20 feet high it has flowered and turns out to be a cross between *Rs. neo-mexicana* and *pseudacacia*. It is of vigorous growth, forming a fine straight stem, better than is usual with the Western Locust Tree, while its flower bunches are longer, less crowded, and their colour lighter, the flowers being nearly white save for

touches of light purple about the standard. The free growth of this plant is like that of *R. pseudacacia*, while it is fully as hardy as the Western Locust, and will prove of value for parks and gardens. From the descriptions published this cross would seem distinct from the natural hybrid found in Colorado, and has been named *R. Holdti Britzensis*, or Späth's variety."

LORD POWERSCOURT ON PLANTING.

WHEN I was a young man, in the years 1861-1862, I began by enclosing part of a mountain opposite Powerscourt, at an elevation of from 700 to 900 feet above the sea, enclosing some 350 acres, part of which was an older plantation, with dry stone walls, and planting it with Larch and Scotch Fir. The old wood was some 40 acres in extent, and I planted the remainder. The trees have thriven well, and I am now cutting and selling Larch some 40 feet high, and making a fair profit. The success of these induced me to undertake a similar operation on a larger scale, and the method was the same in each case. I employed a small gang of seven or eight men to build dry walls, 6 to 7 feet high, with the stones on the mountain side, round the site of the proposed plantation, with a "Scotch coping" on the top, the outer face of the walls being built perpendicular, or with a slight "batter" inward towards the top to prevent its falling outward when the stones had settled, the coping projecting some 8 to 10 inches to prevent sheep from jumping in from the mountain outside. Wherever there were mountain streams or rills crossing the wall we made openings, with stone lintels and iron gratings slung on bars at the top and left loose at the bottom, to let the

water through and prevent stones or gravel from stopping up the waterways; and the streams were deepened and straightened where necessary so as to discharge the flood water through the plantation and out on to the land below, and so into the river in the valley.

The plan adopted in planting was that usual in Scotland, called notching. The planter, with a spade made for the purpose, cuts the surface in the shape of a cross, and by reversing the spade turns up the four corners of the soil, when a boy following him with a bundle of plants drops one into the hole, and the planter, holding the plant upright with one hand, treads down the notch again over the roots with his feet. This is all that is required with small plants of from 9 to 15 inches in height, the best size for planting, such as are called by nurserymen three years' seedlings twice transplanted. I had reared the plants myself in a nursery in a demesne here, of about six acres, transplanting the seedlings wider apart in rows until the third year, when we planted them out on the mountain. I purposely placed the nursery in the highest and most exposed position in the demesne, so as to make the trees as hardy as possible. The large plantation which I formed last contains an area of rather over 700 acres, and is situate on the south-west side of Glen-cree and is called Ballyreagh Wood, from the townland in which it is mostly situated. It was commenced in 1869 and took about nine years to complete. The number of plants put out was from 300,000 to 400,000 annually, planted about 3 to 4 feet apart, so that there

must be about 4,000,000 trees in the whole. Besides the Larch and Scotch Fir I planted several thousands of the rarer kinds of coniferæ, *Abies Douglasii*, *Thuja gigantea*, *Cedrus deodora*, and *atlantica*, *Pinus insignis*, *Cupressus Lawsoniana*, *Wellingtonias*, *Araucaria imbricata*, and others, all of which appear to be quite at home in the rocky granite soil of the mountain; but the most successful of the rarer kinds is the Corsican Pine.

Besides these large plantations I have planted in the demesne and all along the valley to the deer park thousands of the rarer coniferæ, of

*The Rarer
Conifers.*

which the most successful are *Abies Douglasii*, *Thuja gigantea*, *Pinus insignis*, *Picea nobilis*, *Araucarias*, and many others, some of which have already attained a height of 70 to 80 feet. In one place on the way to the deer park I planted one hundred *Araucarias* all in one group, which I nursed up with Larch and Scotch Fir for shelter. These latter have all been cut away, and the *Araucarias* stand by themselves, forming a remarkable feature in the landscape. We are often visited by severe gales, and many trees are blown down, but the *Araucarias* do not seem to suffer so much from wind, and none of this group have been blown down yet. *Wellingtonias* also stand the wind very well, but *Abies Douglasii* is apt to have the topshoots blown off when it tops the surrounding Larch and Scotch Fir. The *Pinus Laricio* is one of the best for exposed places and will grow in the poorest soil; I have some growing in nothing but sand, as

is the case at Holkham, where my father-in-law, Lord Leicester, has planted hundreds of *Laricio* and *Austriaca* on the sand hills on the sea beach, where they are in the most flourishing condition.

Some of the plantations were made by digging holes to plant the trees, and

*Young Plants
Best.*

larger plants were put in; but the best and cheapest way is the system of notching and putting in small plants 9 to 15 inches high, as these do not shake with the wind and get settled in the soil, whereas the larger plants get shaken and many of them do not thrive in consequence. The fencing in of the land taken up for planting must be done, of course, before planting is commenced, and while the trees are young rabbits must be exterminated. I have specimens of *Pinus insignis* and *Abies Douglasii* of my own planting which stand now 70 and 80 feet high and 6 to 7 feet in girth.—*The Times*.

LAWN GARDENS AT OXFORD.—These gardens of New College are indescribably beautiful,—lawns of the richest green and softest velvet grass, shadowed over by ancient trees, that had lived a quiet life here for centuries, and have been nursed and tended with such care, and so sheltered from rude winds, that certainly they must have been the happiest of all trees. Such a sweet, quiet, sacred, stately seclusion—so age-long as this has been, and, I hope, will continue to be—cannot exist anywhere else. We concluded the rambles of the day by visiting the gardens of St. John's College; and I desire, if possible, to say even more in admiration of them than of those of New College,—such beautiful lawns with ancient trees, and heavy clouds of foliage, and sunny glimpses through archways of leafy branches, where, to-day, we could see parties of girls, making cheerful contrast with the sombre walls and solemn shade. The world, surely, has not another place like Oxford; it is a despair to see such a place, and ever to leave it, for it would take a lifetime, and more than one, to comprehend and enjoy it satisfactorily.—NATHANIEL HAWTHORN.

OUT WITH A SAW.

To those who love their gardens this is perhaps the dreariest time of the year. Everything is either ice-bound or in that state of clammy saturation which is yet more cheerless. The last of the red leaves and scarlet berries passes with Christmas, and it is too soon to look for the first flower of spring. Spite of its poetic associations, personally I find it very difficult to get up much enthusiasm over this "first flower." It is commonly a forlorn little production whose appearance strongly suggests that it would have done better to lie low a little longer; but, after all, there is comfort in the thought that the shortest day is well over, and a spray of winter-flowering Jasmine, or a whiff of the Winter Heliotrope (*Tussilago fragrans*) will not allow us to become quite misanthropical. And there is work that may be done in the intervals of bad weather, delicate touches to bear fruit hereafter, and that without coming in contact with the clammy soil, or plodding through newly turned land.

What better chance is there, while the summer-leaving trees are bare, of passing in review those trees and shrubs of our gardens and pleasure grounds which often receive scant attention at other times. English trees are sadly neglected and often left to shift for themselves in a way unthought of in other countries. Our neighbours across the channel err in the other direction, and can never leave their trees alone long enough for them to throw off that artificial look so characteristic of closely trimmed stems. In many parts of France it robs the country of much of its wooded beauty and so leaves its impress on the landscape that English travellers can detect at once their foreign surroundings by this alone. Such light wood has little value with ourselves, but in a land where coal is scarce these trimmings are turned to good account by the peasant, the prunings that an Englishman would despise being gathered to "boil the coffee." The use of the old wood-heated ovens all over the Continent creates also a demand for brushwood which gives even light wood a value, so that in many places the lopings of the wayside trees (which are carefully tended) produces a revenue for highway repairs. Unfortunately, in his passion for economy the French peasant often sacrifices the beauty of his trees, which are made to look like lank

scarecrows, running up a long way and doing little when they get there.

Though conditions that would make this light brushwood of value are never likely to obtain in England, for the sake of beauty and the welfare of the trees themselves, far more should be done than at present in the way of pruning. All over the country one may see fine trees spoiled by lack of attention, the vigour of the tree running to waste in a mass of weak suckers and side branches, instead of being centred in the trunk and crown. There are branches by the removal of which a tree gains in beauty and in health—puny inner sproutings which impede light and air and are only destined to wither away sooner or later ;—crowded limbs that cross and chafe each other, or will do so if left alone; and lower branches which have lost their strength and beauty, and only serve to conceal the beauty of the trunk. I learned the value of these touches from a dear old friend who delighted in his trees and spent much of his leisure among them. He used to argue that you must give character to a tree as you would to a child, by encouraging its natural bent while repressing its wayward humours, just in the spirit of Captain Cuttle, “Train up a tree in the way it should go, and when you are old sit under the shade of it.” His plan was to carry a keen-edged folding hand-saw (*couteau à scie*) in his pocket, and a second affixed to a stout handle 9 or 10 feet long; thus equipped he removed in the course of daily walks over his extensive property, an immense amount of woodland waste, and unwieldy as his long tool appeared, it proved most effective. I have seen him, in a few minutes, with a few deft strokes transform a shapeless mass of verdure into a tree of beauty and character, by laying bare a trunk here or freeing crowded limbs there, till the branches seemed to fall into picturesque and individual outline distinct from any tree near. With a little training it is astonishing how sensitive the eye becomes to such matters, and how involuntarily the phrase suggests itself: That bough would be better off. The final maxim is, when in any doubt don't cut in a hurry; come back the next day and look again, and the day after that if need be. Your trees will soon repay you and you will learn to love them, and even such a time as the present will not be without its interest.—RUSTICUS.

THE DOUBLE JAPANESE CHERRIES.

WE have never seen among all the flowering shrubs, double or single, in our gardens any that so well withstands bad weather and storms as these Cherries. Like other trees they are influenced by wet years, and in such will not ripen the wood, but in years of good bloom they are amazing in their beauty even in times of storms and gales, night and day. In Japan it is said, by those who have seen it there, to attain a height of 80 feet, but in this country we mostly have young trees, mostly grafted, which cannot give us the same results; therefore we cannot say what it may finally do, but it promises very well even in the grafted state. By the Japanese it has been cultivated more than any tree for centuries—used in all gardens and temple grounds, and by highways, in some cases in avenues a mile in length; thousands of trees being planted in this way in Japan. It is an excuse for a great holiday, and not being a short bloomer as some of our Cherries are here, it gives time for such festivities. It would be interesting to know the wild tree from which this comes. The handsome Cherry known as Waterer's is a variety of the Japanese, and a very good one. The deeper coloured one lately introduced by Veitch is another variety. In all there are said to be quite twenty double-flowered varieties of this fine tree. One sometimes called *Sieboldi* is another form of it. We have lately been happy enough to get double forms of one variety on their natural roots, and have planted them side by side with the grafted trees.

As to the very important question of how to plant these Cherries so as to get their best effect, the first thing is to plant liberally, and not be satisfied with one tree only, however well placed. The next is to plant with some back-

TREE AND WOODLAND IN PICTURES BY THE OLD MASTER PAINTERS.

To all who take a deep interest in planting or landscape gardening in any bold way, the pictures of the great masters



THE VALLEY FARM, FLATFORD, DEDHAM.

ground of Yews, Hollies, or other ever-green trees; and lastly, if possible, to put them in slightly different aspects and positions so as to secure a succession of bloom.

must for ever be instructive. Drawing all their lives the most beautiful things in Nature, they acquire a power, not only in drawing, but in many other things of great interest to all who study

landscape. Their selection of subjects alone is of value, for there are limitations in landscape painting as in all arts, and many beautiful things cannot be done at all. From our point of view, then, the art of the landscape painter is the most important of all, as also the most difficult to acquire, as is shown by the rarity of good work. We propose, therefore, to give from time to time engravings of some of the greatest landscape painters of our own or other lands, beginning in this issue by one of Constable's.

THE YEW IN HAMPSHIRE.

IN Hampshire specimens of Yews are to be found in almost every description of soil and situation, from the rugged veteran on the wind-swept chalk downs, the last survivor of many a hard-fought field, still refusing to surrender to time or the storms that sweep around his weird and ghost-like frame, down to the child of ease and prosperity, nourished and sheltered in the valley below. The county must have supplied a large proportion of the bows used for war as well as sporting purposes in the olden time. On some of the chalk hangings at the present day the young seedlings can be numbered by thousands, but whether the tree ever formed woods of any extent I do not know. A peculiarity in the growth of the Yew is that when young it grows with the rapidity of a Larch, and then suddenly stops at between twenty and thirty years of age and assumes the bushy and spreading form characteristic of the tree. It seldom exceeds 60 feet in height.

A churchyard is hardly complete without its Yews, many of which are of a great age and size, and the age of the trees is a fertile source of guessing and calculation with many writers. De Candolle gives the age at 1,214, 1,458, 2,588, and 2,880 years, so that there is ample room for guesswork. In the churchyard of Selborne is the finest specimen in the county, some say in England, but this it would be hard to decide. It stands on the south side of the church, and the best view of it is obtained from the south-east.

Gilbert White, in his "Natural History of Selborne," does not mention this tree. This is unaccountable, as he has taken notice of almost every notable thing in his native place in his interesting letters. There is a tradition that he gave the age of it at 2,000 years. Measured in 1881 it had the large circumference of 25 feet 2 inches, a sheer estimated height of 55 feet, and spreads its branches from north to south 22 yards. It is in vigorous health, the leaves having that deep dark colour of a thriving tree, and is without a flaw in its symmetry. The subsoil is the green sand, bordering on the chalk. The ancient but small church of Lockerley, situate about $1\frac{1}{2}$ miles to the west of Dunbridge Railway Station on the Bishopstoke and Salisbury line, is mentioned in Domesday Survey as being one of the chapelries attached to the mother-church of Mottisfont, of which it is still a curacy.

To the south of the ancient fabric and in the churchyard stands a Yew with a girth of 23 feet 4 inches, only 1 foot 10 inches less than the one at Selborne, but it does not look so healthy, and has a height of only 32 feet. It was measured in 1879. The next one to be noticed is in a nut orchard at the village of Hurstbourne Priors, near Whitchurch. The girth in 1879 was 23 feet 10 inches, or 6 inches more than the Lockerley one, but it is a very rugged specimen, and is only remarkable for its large girth; soil, clay on the chalk. In Little Somborne Park there are a number of very old ones, many of them quite hollow, riven and torn with the wear of centuries, and although not so large as those mentioned I should say they were older—no doubt the survivors of the time when, in the adjoining parish of King's Somborne, John of Gaunt had a park and a palace, and where there are the remains of butts where the retainers of the Duke may have practised archery, he being a patron of the art, as Shakespeare has it in "Henry IV.," when Justice Shallow says, on being informed of the death of "Old Double," "Dead! he was an excellent shot! John of Gaunt loved him, and betted money on his head; and dead." The largest is at the back of the kitchen garden; it is quite hollow, and has a girth of 21 feet $4\frac{1}{2}$ inches. Soil, clayey loam upon a subsoil of chalk.

R. S. J.

FLORA

AND SYLVA.

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[Monthly.

THE PITCHER PLANTS

(*Nepenthes*).

FROM the time when the first of these graceful and singular plants became known to travellers in the East they have excited interest: their structure and life-history being so different from that of other plants. Their very name, alluding to the mystic draught supposed by the ancients to bring forgetfulness of ill, has reference not so much to any medicinal value of the plants as to their strange beauty, causing the traveller to forget for awhile his privations.

There are forty or more known species of *Nepenthes*, which are, with but

Range. one or two exceptions, confined to the tropics, many kinds being strictly

local. The greatest number are from Borneo and the adjacent islands, though a dozen or more are found in the Malay States and a small group in Northern Australia. Scattered species come from New Caledonia and the Philippine Islands in the east; one each from Ceylon, the Seychelles, and Madagascar; and one is found upon the hills of north-east India, the only kind found upon the mainland. There is common to the greater part of this area a uniform cli-



mate, varying little from day to day and from one season to another, and an atmosphere constantly saturated with vapour at a high temperature. These conditions are at the same time so varied by local conditions, such as elevation and aspect, that it is difficult to fix any rule as to the needs of the plants, while the conditions under which some kinds thrive are so peculiar as to make their cultivation difficult or impossible. Most of them are found little above sea-level, but in the mountains of Borneo some are found at a height of many thousand feet, and it is these kinds which are the most difficult to obtain and to grow.

Some of the species grow mainly upon trees, their long stems clinging

to them and rooting here and there into the growth of moss and fibre thickly coating their trunks.

Structure and Growth.

Other kinds of dwarf growth root upon the ground and amongst the *débris* falling from overhead, their stems trailing and covering the ground with pitchers. Others again, as related by Mr. Burbidge, thrive upon rocks near the rivers or upon the sea-shore, exposed to a fierce sun and drenched and scorched by turns. The pitchers are suspended as flasks or open urns upon a stout stalk, which is a continuation of the midrib of the leaf; they are closed until nearing maturity, when their colour becomes brighter, the lid at the mouth expands, and glands placed around its rim secrete a sugary liquid by which insects are lured into the fluid with which the urn is partly filled, their escape being cut off by a fringe of stout hairs or teeth upon the inner rim. The fluid contained within the pitcher resembles in its chemical action that secreted by the stomachs of animals, while the inner coating of the sac shows glands capable of absorbing the digested food elements. Insects of all kinds are attracted both by the honied secretions and by the bodies of previous victims, and are in turn overcome by the juices; even small animals are sometimes entrapped. The properties of this fluid are well known to the natives, who make use of the draught from partly-grown pitchers as an aid to digestion. The plants differ in size from long climbing stems of 30 feet to dwarf tufts of about a foot, while the urns which they bear are in some cases over 18 inches in

length and in others smaller than a man's thumb. They vary no less in shape, texture, and endurance, the mature pitchers lasting in beauty from six months to upwards of two years in some kinds, and their colouring is varied in shades of green, crimson, brown, and purple. The leaves also not only vary kind from kind, but are different at stages upon the same plant. Upon the lower leaf-stalks, where the finest pitchers are produced, the true leaves are less developed, and in some cases only rudimentary, but as the plant grows in height the urns become smaller and the leaf-blade gains in importance until no further pitchers appear and the plant flowers. The flowers, borne in spikes, are green and not at all showy, giving off a peculiar mouse-like smell, hence, unless wanted for crossing, it is usual to cut back the stems as soon as the pitchers diminish, and so force fresh pitcher-bearing growth from the base. The sexes are apart in the *Nepenthes*, the seed-bearing flowers being fertilised by wind-carried clouds of pollen given off by the more numerous male flowers; save in the flower-spikes there is little distinction between the sexes, though in some kinds the male plant would appear more vigorous and free.

With little knowledge of the natural life of the plants, it was years before

any of them were well grown in Europe, and hence arose the idea of

Culture. their need of special houses. That this is unnecessary is proved by the culture of the hardier species and their hybrids in ordinary glasshouses and with other stove plants, though where a collection

is grown it is better to keep them apart. Though sometimes succeeding in pots, they are best grown as basket-plants in a mixture of peat-fibre and sphagnum moss, and with heat and moisture at all times, but most when in active growth. Shade, and air on the hottest days only, must be regulated according to weather and season, and varies somewhat with different kinds; dryness and cold draughts must be avoided, nor should the temperature ever fall much below 70 degrees even in winter. A little very weak cow-manure is sometimes given to strongly rooted plants while in full growth, but unless used with great care such stimulants do harm, and the plants usually grow well enough without such feeding. Vigorous kinds will make 3 to 4 feet of growth, bearing, perhaps a score of pitchers in a season, but their stems are not allowed to run, being *stopped* in order to induce the finest pitchers which spring around the base. When half ripened, the growths so removed may be used as cuttings, which root in a high and evenly moist temperature, but they need careful handling until well established, the roots being very tender and in some kinds slow in forming. Plants may also be raised from seed, which germinates in six or eight weeks when quite fresh, but is much longer when imported—the young plants forming at first a rosette of small leaves at the tips of which rudimentary pitchers appear. With successive leaves these gain in size and importance, are gradually separated further and further from the blade by the lengthening midrib, and at length, when fully characterised pitchers are formed, they

appear only after the complete development of the leaf.

Most of the wild kinds have been introduced at various times, but of these a certain number have perished, their places being taken by crosses made between such kinds as are most easily grown; among these are some of the finest kinds, now long known in gardens, and their hybrids tend to become increasingly at home under glass. These seedlings, for their beauty and ease of growth, are therefore of the first importance, and have replaced such of the more delicate *species* as need greater care. The variety of form and colour found in these crosses is remarkable, seedlings of the same parents showing much variation not only in detail, but in vigour, freedom, and endurance. Though by no means an invariable rule, experienced growers admit that the kinds bearing pitchers that are much blotched and highly coloured are usually more robust and of easier culture than green or pale-pitchered plants.

Beside the two last imported kinds, *N. Sanderiana* from Sumatra, and the strangely formed *N. ven-*

New Kinds. *tricosa* from the Philippines, both of which are fully described below, Messrs. Veitch have added to the number of new plants by two fine hybrids raised by their grower Mr. Tivey, from crosses between kinds in the collection at Chelsea. Both are of the same parentage and of mixed descent, being a cross between *Ns. mixta* and *Dicksoniana*—themselves both hybrid, coming from four distinct species. Despite their relationship the plants are

different in growth and detail. *Nepenthes Sir W. T. Thiselton-Dyer* is a plant of free and rapid growth, first shown before the Royal Horticultural Society in August 1900, when it gained a first-class certificate. Its pitchers are very large, measuring fully 14 inches from the base to the tip of the lid, broad in proportion, and richly blotched with purplish-brown on a green ground. The broad rim is waved and finely ribbed, showing within it paler rings circling the mouth; the wings are of uniform width, running the length of the pitcher and fringed with brownish hairs; the lid is held nearly erect upon a long hump-like process, bears a long spur behind, and is finely spotted upon both faces. As a plant of good growth and constitution and for size and beauty of pitcher it is one of the finest seedlings yet raised.

The second seedling is *N. picturata*, a plant of slower growth, which is not yet upon the market, but of which, through the courtesy of Messrs. Veitch, we are able to give a fine engraving. Its leaves and pitchers are tough and leathery, lasting in beauty for many months upon the plant. Though the urns are less in size, being 10 inches long and 4 inches wide at the mouth, they are of fine rounded shape, gently tapering towards the base, and striped with crimson upon green. The wings are bold and of uniform width, fringed with long hairs, while, as seen in our engraving, the pitcher closely hugs its leaf-stalk. The broad rim is rounded and reflexed, waved at the edges and deeply ribbed, conspicuous also from its colouring of rich mahogany red. The lid, finely

veined and streaked, is poised, like that of its companion plant, upon a long rising process, but instead of standing nearly erect it overhangs the mouth of the pitcher.

The following wild kinds and their crosses are admitted by botanists, but are not all of them in cultivation:—

Nepenthes albo-marginata.—A dwarf kind growing on rocks upon the sea-shore near river-mouths in Borneo and Malacca: a delicate grower bearing rounded pitchers swollen at the base, coloured light green below and reddish above, with a white ring just below the mouth; leaves 9 to 12 inches long, narrow, and slightly hairy.

N. amabilis.—A hybrid between *Hookeriana* and *Rafflesiana*, and rather like the first-named. A plant of good habit, freely producing urns mottled with dark crimson.

N. Amesiana.—A fine hybrid between *Rafflesiana* and *Hookeriana*, bearing green pitchers prettily marked with red.

N. ampullaria.—A distinct species from Borneo, in which the lower leaves give place to a dense cluster of small ovate pitchers of pale green, 2 to 3 inches long, with a very small lid. An old plant in gardens, free-growing, and of easy culture. Two varieties of this plant are *picta*, which bears pitchers streaked and spotted with reddish-brown; and *vittata major*, a form with flask-shaped winged pitchers, mottled with dull reddish blotches.

N. angustifolia.—A species with narrow, stalkless, stem-clasping leaves, the upper ones bearing long tendrils. Small urns of 2 inches, flask-shaped with a long neck, narrow fringed wings, and green spotted with red. Sarawak.

N. atro-sanguinea.—A fine hybrid of uncertain origin, remarkable for its highly-coloured pitchers borne freely upon even small plants. They are of reddish-crimson, slightly spotted with yellowish-green, round, widening towards a pointed base, with broad fringed wings; the flat, closely-ridged rim is coloured with bright red and deep purple.

N. Balfouriana.—A fine seedling raised by Messrs. Veitch from *Mastersiana* and *mixta*, themselves hybrid plants. Pitchers 7 to 9 inches



NEPENTHES PICTURATA. (Engraved for "Flora" from a plant in the Royal Exotic Nurseries, Chelsea.)

long, of yellow-green, shaded light red and streaked with dark crimson; the hairy wings are prominent, and the rim yellowish, darkening with age.

N. Bernaysii.—One of the rare Queensland species, not yet seen in this country. A short climbing plant bearing long narrow pitchers.

N. bicalcarata.—One of the finest and most distinct kinds, bearing broad bag-shaped pitchers of rich russet-red, clothed when young with ruddy down, and later developing toothed wings. It is a strong grower with large deep-green leaves, broad and glossy; as a wild plant in the marshes of Borneo it climbs to a height of 30 feet, with leaves nearly a yard long. Its great features are the two fang-like spurs projecting downwards from the base of the lid.

N. Burkei.—A variable species from the Philippines, bearing smooth wingless pitchers 8 inches long, and of peculiar shape, narrowing in the middle. They are dark green, blotched with dusky red, growing deeper at the mouth, and of hard leathery texture lasting well upon the plant. Two distinct forms of this plant are *excellens*, with much larger and more uniform pitchers, more richly coloured with reddish-brown, deepening to the chestnut-shaded throat and mouth and the finely-spotted and veined lid. It is a bold form brought from New Guinea, handsome, and of good growth, but less free than the type. *B. prolifica* is distinct and pretty, its pitchers, smaller than in the parent but borne in great profusion, are of pale green flaked and blotched with light red, deepening towards the throat.

N. chelsoni.—A fine cross between *Dominiana* and *Hookeriana*, showing an intermediate habit. It is of free growth, bearing broad pouch-like pitchers of rounded form with prominent wings, their colour greenish, yellow-marbled, and spotted with crimson.

N. chelsoni excellens.—A further cross between *Rafflesiana* and *chelsoni*, producing a plant with massive rounded pitchers, broad, and much marked with crimson-purple; rim broad and richly coloured, wings prominent and stoutly fringed.

N. cincta.—A rare species, imported with *Northiana* from North Borneo, and at first considered a natural cross. It carries finely-coloured pitchers 9 inches long, tubular and straight, slightly enlarged in the middle and

rounded at the base; they are green, flushed crimson, and with irregular blotchings of claret-red. The narrow rim is oblique and somewhat angular, waved, and strongly ribbed, with a narrow white band just below, while the lid arches closely over the mouth of the tube. Leaves long, leathery, and dark green, with an angular midrib beneath.

N. coccinea.—An American hybrid not often seen in this country. Its medium-sized pitchers are flask-shaped, of crimson spotted sparingly with yellow and with a dark ribbed rim of blackish-red; wings deeply fringed and a lid smaller than the mouth. A short-jointed plant of good growth and profuse in pitchers, which are enduring.

N. compacta.—A distinct plant of dwarf growth and bearing an abundance of broad rounded pitchers about 5 inches deep, of dark red or reddish-purple, sometimes shaded with violet, and marbled with creamy-white reaching to the mouth; lid spotted. A basket plant of fine habit.

N. Courti.—Another of Veitch's fine crosses, very free in its flask-shaped pitchers of dull greyish-green, blotched and clouded with crimson, enlarged towards the base, and evenly winged throughout. Mouth finely ribbed, with a small lip of convex form bearing a single spur behind. A robust and handsome variety.

N. Curtisii.—A Bornean species with large pitchers reaching 8 inches, and slightly trumpet-shaped. They are of dull green, thickly mottled with purple, the throat glossy, and the lid finely streaked. A good kind continually in beauty. In this species there is much variation in the sexes, the female plant being known as *C. superba*, and bearing pitchers of similar shape but finer and more brilliant. Their ground colour of yellow-green is almost hidden by blotches of rich red, shading to intense crimson upon the broad rim; lid broad and far more heavily spotted with red.

N. cylindrica.—A garden cross between *Veitchii* and *hirsuta glabrescens*, and a useful and free-growing plant. Its finely-shaped pitchers are borne upon large spreading leaves, and are long and narrow (sometimes more than 8 inches), slightly enlarged below the middle, and pale green in colour with a few crimson spots and a narrow frill about the mouth.

N. Dicksoniana.—A fine hybrid of robust

growth, issue of *Veitchii* and *Rafflesiana*, and intermediate in form. It resembles the last-named in shape of pitcher, but these are sometimes 12 inches in length, of a light rich green finely blotched with bright crimson. The crimson rim is broad and reflexed, lined at intervals with deep purplish bands. Mature pitchers last in beauty for many months upon this striking and beautiful plant.

N. distillatoria.—One of the oldest known kinds, first described in 1682, and a native of Ceylon. It is a true climber, which should be allowed to grow, the upper leaves bearing fine pitchers. Though it can do with less heat than most kinds its growth is often not free. It is, however, a beautiful plant with long narrow pitchers of a ruddy colour, reaching a foot in length upon the wild plant, and holding a pint of water. There is a form, *rubra*, bearing deep blood-red pitchers. Syn. *zeylanica*. Another plant, often miscalled *distillatoria*, is synonymous with *N. khasiana*.

N. Dominiana.—The first hybrid Nepenthes raised, of uncertain origin, but a handsome form of free growth. Its pitchers, borne upon dark green leathery leaves, are several inches long and green, sparsely spotted.

N. Dormanniana.—An American seedling not very distinct. Its pitchers are long and gradually tapering, their pale ground colour heavily blotched with dark red, the broad rim and the lid alone being free from deep colour.

N. Edwardsiana.—One of the beautiful but inaccessible plants of the Bornean mountains, growing upon low moss-covered trees at a height of 7,000 to 10,000 feet in a region of perpetual mist. From the descriptions of travellers it is a robust climbing plant living upon trees, with stems 20 or more feet long, while its enormous rounded pitchers of brick-red colour vary from 10 to 23 inches in length, with a green base and pink frilling around the mouth, but none save dried specimens of this noble plant have ever reached this country.

N. excelsior.—An American cross between *Rafflesiana* and *Hookeriana*. Its pitchers reach 9 inches in length and resemble in shape those of Hooker's Nepenthes, but are more rounded at the base; they are richly marked with reddish-purple and dark brown upon a ground of pale green. A dwarf plant of free growth.

(To be continued.)

THE GARDEN BEAUTIFUL. HOME LANDSCAPE AND HOME WOODS. EVERGREEN WEEDS.

RAMPANT weeds in the garden, however "bad," are as nothing in evil effect compared with that of evergreen weeds. The multitude of Portugal and Cherry Laurels and Privets set down in clouds round country houses is the marring of much in the home landscape. Better many times the effect of our native vegetation of Bracken, Briar, Birch, or any wild scrub that comes near, rather than the dismal green walls which have grown up owing to inconsiderate planting of evergreens out of place. Done with good intentions at first, the result of such planting soon becomes deplorable. Those evergreens are mainly exotic shrubs, and being novelties and easily grown they were planted everywhere, without thought of their true nature or stature. Though considered shrubs, they are in a wild state medium-sized trees, and in our country they grow with an extraordinary rapidity, soon leaving the shrub-state behind and growing above the line of sight. The next step in garden routine is to cut them down to an ugly hard line. In many large places they are planted beneath trees—often fine trees too—so as to cut off from sight the bases of the trees. It is not only the ugliness of the result that we have to think of, but there is also the robbery of the ground by these too facile evergreens of the water that in times of drought ought to go to the trees. The right way with these large evergreens is to mass or group them in woods or plantations,

where they may be very beautiful if allowed to take their natural forms. Nothing is finer in its way than a group of Cherry Laurel 40 feet high in a wood, or the Portugal Laurel also where it takes tree form. But as an ugly groundwork below trees, merely to be cut and hacked about annually, they are worse than useless. If we want a line of evergreen growth beneath the line of sight it is best got by using the Partridge-berry, Savins in various forms, evergreen Barberry, Cornish and other Heaths and Furzes, which will not get above the line of sight, and will give us a beautiful and varied groundwork. Very often where coarse evergreens are used, the grasses, ferns, mosses, and various forms of natural growth under the trees are lost to us.

Where we must have evergreens of a higher stature for backgrounds or any other reasons, it is easy to have them without using Laurels. It is far wiser to grow our beautiful native evergreens, such as Holly or Yew, as they are better in colour, berry, and form than most of the exuberant evergreens like the common Privets and Laurels. The beauty of half the country seats of Britain is marred by the misuse of such things—not even hardy, as both the Laurels are destroyed in hard winters, even in southern parts of the country, whereas with Holly, Yew, and Box we are safe. As to the best thing to do with these crowds of Laurels where they abound, there is no way so good as grubbing and burning on the spot, root and branch, scattering the ashes over the ground and

planting better things. One fatal objection to the use of these exuberant evergreens is the want of light and shade. They are so apt to become pudding-like masses, and where they encroach on walks their effect is worse than ever.

* * *

TRIDAX GAILLARDIODES.*

THERE are only some seven or eight plants bearing this name, nor have they ever attracted much notice, being for the most part uninteresting members of the vast family of Composites. There are, however, two kinds which have recently found a place in gardens—one known as *Tridax bicolor rosea*, a pretty tender annual with uncommon flowers of rose and yellow; the other, *Tridax gaillardoides*, forming the subject of our coloured plate. This new plant is an introduction due to Messrs. Dammann and Co., of Naples, and is said to come from California, the other species being mostly from Mexico. Through no fault of culture these Central American plants are not always well flowered in this country, our climate rarely bringing their rich colouring to perfection. This plant, however, is said to be very free in its flowers of vividly contrasted white and gold, which are borne throughout the summer upon stems 18 inches to 2 feet high. It should be planted in light warm soil and in an open and sunny spot, the seed being sown in gentle heat, and the young plants treated as other tender annuals. The pretty contrast in colour and their length of stem make the flowers useful for cutting.

* With coloured plate from a drawing by H. G. Moon, at Belgrove, Queenstown.



ASTER - A. L. F. B. R.

The other best known members of the group are *T. coronopifolium*, a low-growing perennial with yellow flower-heads; and *T. trilobata*, a similar plant of like habit.

[To the Editor of FLORA AND SYLVA.] SIR,—A few weeks back I received from Vilmorin of Paris a few rooted cuttings of *Eucommia ulmoides*, but I cannot find the name of this apparently new plant in any of my books on Botany. If this plant fulfils Vilmorin's description of it, it might be worth growing in this country. He says that it contains a notable quantity of good gutta-percha. Treated with toluene the seeds have produced the large proportion of 27·34 of their weight of gutta and dried leaves 2·25 per cent. He adds, the first plant introduced wintered in the open without any protection—trained against a wall; the cold having fallen to 8 Cent. = 17·6 Fahr. or 14·4 degrees of frost. The plant may be of sufficient interest to merit a notice in FLORA AND SYLVA, and any information as to its successful cultivation might be interesting and useful.—Yours, etc., WHIN-HURST.

EUCOMMIA ULMOIDES. — A shrub from Northern China, of botanical interest but not likely to prove much more than a curiosity in our climate. The seeds are the only part of the plant which produce any quantity of gutta-percha, and besides being very light in weight it is uncertain whether the plant flowers with freedom in Europe, the one adult plant possessed by Messrs. Vilmorin having been so hard cut for propagation as to prevent flowering. Otherwise it is hardy enough to grow in many parts of the country without any special protection, having stood at Paris uninjured by 16 degrees of frost when growing on a warm dry soil. Botanically it is related to the Euphorbias, with small inconspicuous flowers and their milky juiciness of tissue; its name is due to the likeness between its leaves and those of the Common Elm, and the light-winged seed-vessels of reddish-brown strengthen the resemblance. Its culture is of the simplest in any warm light soil, and it is easily increased from cuttings of ripened wood taken with a heel in early spring before the leaves appear. It has been distributed for experiment by the French authorities in Annam, Tonkin, and their African colonies, but its culture is not likely to be of any practical value in this country.

A TREE SAVIN.

THE Savin is variable in growth and habit, several forms being grown in gardens, such as the Horizontal, Prostrate, and Tamarisk-leaved varieties. There exists, however, another form, which of late years has caused discussion among botanists. This shrub has for many years been grown by M. Jordan, under the name of J. Sabina Villarsi, and it is thus mentioned by Villars in his "Histoire des Plantes de Dauphine (1789)":—"We have a tree-like form at Saint-Clement, near Embrun;" the plant still exists in the same neighbourhood. This Tree Savin is also found around Grenoble, at Mount Saint-Eynard, the Casque de Neron, and the rocks of Comboire. In the department of Hautes Alpes it occurs as stated, at Saint-Clement, and probably elsewhere in the district. This tree should be of value to growers of pyramidal Junipers. It is rare in gardens, growing rather slowly, and bearing berries of deep bluish-black.

VIVIAND MOREL, Lyon Horticole.

THE VIOLET WILLOW (*Salix daphnoides*).

MR. T. SMITH, of Newry, sends a branch of this early-flowering tree, laden (in January) with its silky buds, silvery upon the dark twigs. It is not a common tree and is rarely spoken of in garden books; it flowers in February, and in mild seasons such as this its buds develop very early, being already nearly an inch long and of fine effect. The tree is widely spread over a great part of Europe, and though naturalised in Britain is not native. It is a robust grower with stout stems of a dark purplish colour—whence its name of Violet Willow—but often covered with a white wax-like bloom. It is of somewhat bushy habit, bearing long narrow leaves, silvery beneath and shining above; Mr. T. Smith claims to have used it with success for street planting.

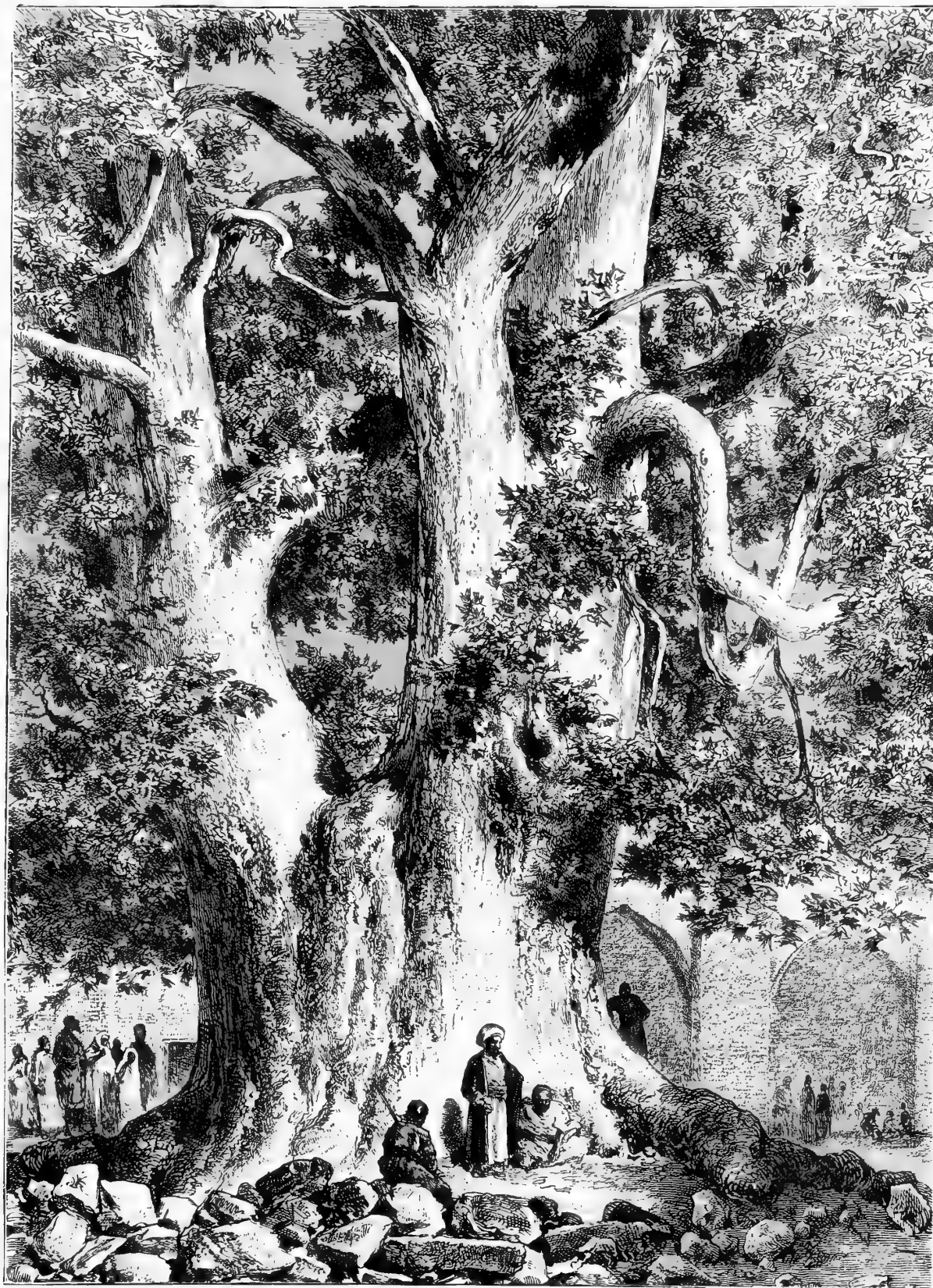
THE GREATER TREES OF THE
NORTHERN FOREST.—No. 12.
THE EASTERN PLANE (*Platanus
orientalis*).

AT first sight this classic tree, of which there are many colossal examples in Eastern countries, might be thought out of place among trees of the Northern Forest; but it thrives even in the London squares, and a tree that resists the winters of London and Paris, and, worse than all, the greasy smoke of Newcastle coals, may well take a place among the greater trees. For noble shade, rapid growth, smoke-enduring, stately stem (often 60 feet clear), and fine picturesque form, there is no better tree, and among its many good qualities are freedom from insect pests which worry most trees. It is also easy to increase by seed, layers, or cuttings; the first the best way, the seed coming freely in other countries, if not in ours. The Eastern Plane is not a lover of mountain land, but thrives in river-carried soils in plain and valley. In Eastern countries it seeks the waterside; in our land that is not so essential, but the best growth is always in valleys or alluvial soil. Its beauty and health in London may in part be owing to its way of "throwing off its black skin yearly like the snake." Though so common in our midst, the Eastern Plane was for many years mistaken for the Western or American Plane, which does not thrive in our country. Apart from the fine Plane trees seen in London squares and parks, there are many large trees in the Thames valley and in other southern and western lowlands—Kew, Oxford, Ely, Castle Ashby, and Syon.

"The Plane grows to a very large size and to a great age in the eastern parts of Europe and Asia Minor. A very noble example may be

*The Eastern
Plane at Home.*

seen in the village of Vostigo, in Greece, on the Gulf of Lepanto, which girthed (when I was there in 1842), at 5 feet from the ground, 37 feet 4 inches. This tree, growing in the middle of the village on a gradual slope, standing on a raised platform of flat stones intended for protection to the roots, is a striking object on entering the village, and noteworthy as having existed in the days of Pausanias, the historian. He, living in the second century, mentions it in his travels, and the tree must have been of considerable size at that time to have made it worthy of remark. Its age probably dates from before the Christian era, which would make it more than 2,000 years old. Yet when seen by me in 1842 it was in full vigour and health, the stem for some way up perfectly sound, though many of its larger limbs and branches had succumbed to age and storm. There are many other parts of Greece and Turkey in which I noticed Planes of remarkable size and beauty, as along the banks of the stream running through the Vale of Tempe into the plains of Thessaly at the foot of the Olympian range, where many magnificent and stately specimens fringed the banks of the stream for many miles, and were growing in the greatest luxuriance when I visited the country last, in 1846. I was especially struck with the magnificence of a grove of these trees in the island of Crete, in a vale at



AN OLD TREE OF THE EASTERN PLANE.

the foot of the White Mountains in Sfa-kia, a few hours' ride from the town of Khania, watered by a copious stream, which probably derived its name *Platanus* from the number of Planes growing there. Their beauty was much enhanced by many of the largest trees being held firmly in the grip of gigantic vines entwining their trunks for some feet above ground, as it were, with a huge cable nearly the thickness of a man's body, through and over the branches to their very tops, and afterwards hanging down in long festoons of bright leaves and fruit. And yet the Planes seemed in good health, though they must have been held for many a long year in the grasp of these vines" (D. H. in *The Garden*).

These are of little importance beside the common kind: *P. o. insularis*

*Varieties of the
Eastern Plane.*

has leaves much smaller than the common Plane, roundish at the base, with three or five lobes usually entire, and with thin leaf-stalks as compared with the stout ones of the type. The under-sides of the leaves frequently take a russet tinge, and the bark is rougher and sheds itself less. This variety is found in Cyprus, Crete, and other islands of the eastern Mediterranean region, in common with a sub-variety showing a marked modification in the form of the leaf in which, though cut very deeply, the lobes frequently touch. The bark of this form is rougher and more persistent than in the cultivated varieties. *P. o. acerifolia*, the most widely-spread form, is easily recognised by its large leaves divided

into broad lobes, slightly cut and widely open. The bark is easily detachable in large flakes, leaving the stem smooth and glossy. This variety, remarkable by its vigour and ample foliage, is abundant throughout southern Europe and is the form commonly seen in London. *P. o. flabellifolia*: Very large leaves 9 to 10 inches in length and width, deeply cut into long indented lobes, and borne on short leaf-stalks.

In addition to these well-marked forms there exist a number of more or less distinct garden variations, thus:—*cuneata*, *integrifolia*, *laciniata*, *macrophylla*, *palmata*, and *pyramidalis*. Amongst the more distinct of these are *asplenifolia*, with foliage finely divided and graceful in effect; *liriodendrifolia* with three-lobed leaves resembling those of the Tulip-tree; and some variegated forms, which, as manifestations of disease, are better left to those who raise them.

Though in the main free from insect pests and diseases, the Plane is subject to the attacks of a minute fungus (*Gleosporium nervisequum*) which is now the cause of increasing loss in France. Its first effects are seen in the premature withering and fall of the leaves. In conditions favourable to the disease this may occur for several seasons, until not only the smaller branches but also the main stems and trunk are attacked. The great size of the trees is against any systematic treatment. The smaller-leaved kinds seem in general less liable to the disease than those of ampler foliage, the forms of *cuneata* being nearly

Enemies.

exempt. It may be that the severe yearly pruning which nearly all Planes in France undergo favours the spread of this fungus, not merely by checking natural growth but by giving ready access to the vital tissues through the wounds so caused. On every ground this cutting is bad, and without some imperative reason should never be done. We need only compare the natural beauty of the Plane with the clipped trees on the Thames Embankment and elsewhere to see how bad a system it is. Left alone its form is perfect, and no trimming can be other than an injury.

The Plane tree is common over the whole of the south of Europe, and of late years vast sums have been spent by local authorities in planting it along the roadsides, its shade giving welcome relief from the sun's glare in summer, while the leaves fall in autumn as soon as its warmth is needed. There are few villages too poor not to boast a *place* and line of Plane trees, and in many parts, as on the plains of Lombardy and the Riviera, avenues of great length and beauty are formed of them.

The Plane, like other introduced forest trees, suffers from our way of growing it more in pleasure-grounds than as a tree of value for woods. The pleasure

garden or shrubbery is no test, and hence some introduced trees are falsely reputed as of no timber value. The wood of the Plane is grown by us in such small quantities as not to allow of its being fairly tried or marketed.



EASTERN PLANE (CUT-LEAVED FORM), HIGHCLERE.

In a very interesting note to *Woods and Forests* by a "Timber Merchant," our English-grown Plane is said to be used by first-class coachbuilders and pianoforte makers, no wood taking paint so well, or standing better for the sides of waggonettes. In pianofortes it is used for bridges, its toughness and

hardness enabling the pins to be securely held. This timber merchant declares that the wood of English-grown Plane trees is far better for this purpose than that of the American Plane, and that, where the soil is good and warm in all the southern parts of the country, it might be well worth while to grow it as a forest tree. Its rapidity of growth and fine clear stem should place it in the first rank, and the old wood is handsome, resembling walnut. Grown rather closer together than is usual, the timber would be all the better and cleaner. Spite of its great spreading head the tree may be so massed that, while allowing full play for upward growth, the greatest mass of timber may be kept in the boles.

BOTANICAL SYNONYMS OF THE EASTERN PLANE.—The accepted name is that of Linnæus—*Platanus orientalis*: which is the *P. palmata* of Mœnch, *P. hispanica* of Tenore, *P. vulgaris* of Spach, *P. occidentalis* of hort. (not Linnæus), *P. insularis* of de Candolle, *P. orientalis*, var. *insularis*, of Kotschy, *P. o. nepalensis* of Wesmæel, *P. o. genuina* of Wesmæel, *P. o. elongata* of Aiton, *P. laciniata* of Courset, *P. nepalensis* of Morren, *P. nepalensis* and *elongata* of gardens, and *P. umbraculifera* of Leroy. * * *

PLANTING WIND-SWEPT SHORES.—The merit of the Monterey Pine (*P. insignis*) as a shore tree is well seen at Bodorgan, in Anglesea, where many trees are in rude health within a few yards of the sea. There is nowhere a more wind-tortured shore judging by the appearance of the few stunted native trees in the open land, but planting of an effective kind has been done almost on the seashore. At the water's edge is the Sea Buckthorn, Furze, and Barberry, which first bar the south-western gales and winds, and a few paces within these, rows of Pines and Evergreen Oaks appear, and soon with the aid of these excellent shore trees, almost any kind of evergreen planting may be carried out. The whole place is most instructive as regards planting near the sea. The contrast between the wind-swept surface of the island and the noble avenue of evergreen trees leading from the lodge to the house is very striking. Such planting, however, can only be carried out well where we plant a wood and not a mere belt, the trees in the massed wood protecting each other better than any artificial shelter that could be devised. Into such a wood the wind may tear fiercely, but is soon tamed down to something like gentleness.

THE SASSAFRAS TREE.

To see this beautiful tree at its best one must look for it in rich alluvial valleys, and in bottom-lands along the great rivers of our Southern and South-Western States. Neglected in the fence corners, and along roadways in New England, the Sassafras has degenerated into a straggling shrub, seldom over 10 or 15 feet in height, nibbled by rabbits, and browsed by cows, who are very fond of rubbing against the aromatic bark. But left to itself in rich moist soil, and under the warmer skies of the South, it develops into a lofty tree of noble proportions, sometimes 125 feet in height and 7 feet in diameter of trunk, while its spreading head, in umbrella shape, shades a wide expanse of ground. Neglected as it now is by American planters, yet at one time no tree of the Western hemisphere was more valued for the fabulous virtue thought to reside in its bark. This may be because it does not take kindly to the severe winters of New England, where, though quite hardy, it seldom becomes a tree. When the Spanish doctor, Nicholas Monardes, first described the Sassafras in his "Natural History of the New World," published in Seville in 1569, it sprang at once into great repute as a sovereign remedy for all diseases. The Indians had long used the bark and roots of the Sassafras for medicine, and it was from them that the French in Florida first heard of its virtues about the middle of the sixteenth century. The Indians called it Pavame. Soon all the vessels returning to Europe from the New World carried a store of Sassafrax, as the Spaniards called it, to enrich the pharmacopœia of the day. The bark of the roots of this tree is the most aromatic part of the plant. The leaves and twigs are mucilaginous, and Sassafras Tea is still a homely remedy in use in many primitive neighbourhoods. Although the belief in the virtues of Sassafras is not so widespread as in the sixteenth century, when many learned treatises were printed in its honour, yet it is still valued for its mildly stimulating properties, and is considered a sovereign specific for strengthening the sight; oil of Sassafras is used as an ingredient in some perfumes.

But it is for its beauty that I would chiefly extol it. Whoever has lived on intimate terms with this tree cannot fail to love it. Fastidious in its requirements, it belongs to an aristocratic family—the Lauracæ, which gives us the

Poet's Laurel ; and it is of little use to expect it to flourish in poor soil, or when crowded. In moist and mild parts of England, planted in rich and deep soil, the Sassafras ought to attain a good size. Its habit of growth is at first scanty and straggling. It has a straight stem crowned with sparse foliage in youth, gradually broadening into a beautiful head with dense foliage in layers, from branches almost at right angles with the trunk.

Early in the spring the Sassafras is conspicuous for its clusters of small blossoms, light yellow in colour, sometimes diecious and sometimes perfect, that appear before the leaves. The scales of the winter-buds consist of three outer ones that soon fall when their protective work is done. Four or five inner scales begin to increase when the bud opens. They are covered with fine silky hairs, and form an involucre around the flower-clusters. At first this involucre is light yellow, but it gradually assumes a bright red colour, a pretty contrast to the yellow blossoms. When the young leaves appear they are in beautiful shades of amber, salmon, and sienna. The delicate under surface of the foliage is covered with lustrous silky hairs, and so fine is the texture of these young leaves that they are translucent in effect under the influence of the bright spring sunshine. When the leaves mature they are a soft, warm, medium green, showing their downy under surfaces in every whiff of wind. The leaves are from 3 to 5 inches long, and 2 to 4 inches in width. Sometimes, as though in caprice, a leaf will put forth what resembles a thumb on one side, looking like a mittened hand. Other leaves will put forth, as it were, a thumb or finger on each side of the main lobe ; and all three forms of leaf are often found on the same twig.

It is in the autumn that the Sassafras must be seen if its beauty is to be fully appreciated. The foliage hereabouts begins to colour in October, and persists until late in November. A copse of young Sassafras is then a fine harmony of colour, running the scale from tenderest citrine, amber, and old Madeira, to intense orange and scarlet. The new growth throughout the summer shows the same attractive colouring as the young leaves in the

spring. The fine blue berries, half an inch long, and set in a bright red calyx, add much to the beauty of its autumn dress, but they are greedily devoured by the birds, and seldom remain long upon the branches. Young trees fruit sparsely or not at all. It is the large trees in rich soil that one sometimes finds laden with fruit and as fine a sight as our southern woodlands present. I have seen trees thus laden, their beauty enhanced by the Virginia Creeper clothing their trunks, running high up among their branches, and flinging out their scarlet festoons in high relief against the parti-coloured foliage of the trees. The bark of the Sassafras is



THE SASSAFRAS. LEAF, FLOWERS, AND FRUIT.

roughly ridged, thick, and dark reddish-brown. On small trees the bark is greyish, curiously streaked and striped with dark brown, while the young branches and twigs are green.

Mr. Scott, an old authority on the trees of America, writes thus of the Sassafras :—"The crooked Sassafras of the woods, running up as if uncertain what point in the heavens to aim at, and at what height to put out its arms, seems as unhappy there as a cultured citizen forced to spend his life among the Comanches. But the same tree in rich soil, and in the open sun, expands naturally into one of the most beautiful heads of foliage among trees." He speaks of it as the most neglected, considering its rare

beauty, of all our native trees. "The deep furrows of its warm brown bark; the angular ruggedness of its branches, and the flattened form and horizontal shadows of its head; give it an air of age and dignity; while the pure colour, abundance, and fine-cut outline of its leaves, add a refined expression during its period of foliage." The foliage breaks into softly rounded horizontal layers, drooping on the exterior to catch and reflect the sun, so that it presents to the eye broader and warmer masses of light than does the foliage of any other tree of our forests.

Where the soil and climate suits the *Sassafras* its growth is rapid, from 1 to 2 feet in a year; where it flourishes farmers know that the soil is fertile. Its wood is a soft orange colour, durable, and rather hard; it is used in some parts of the country for fencing. The pleasant taste and aromatic fragrance of the bark and young leaves make the *Sassafras* a favourite with those who like to nibble among their shrubberies, and the habit is soon formed of never passing a tree without a taste of its pleasant mucilaginous foliage. All trees have characters of their own; and the *Sassafras* is the embodiment of sunny, cheerful warmth. It does not transplant well when large, as the thick root-stocks have few rootlets; but small suckers are easily planted, and it may be raised from seed.

DANSKE DANDRIDGE.

Rose Brake, West Virginia, U.S.A.

[The *Sassafras* Tree was at one time far more often planted in the warmer parts of our country, and in open soil it grew to a fair stature though nothing like such as are named above. The planting of many good trees has been seriously hindered by the worship of *Wellingtonias*, *Araucarias*, &c., and it is now almost a rare tree.—EDITOR.]

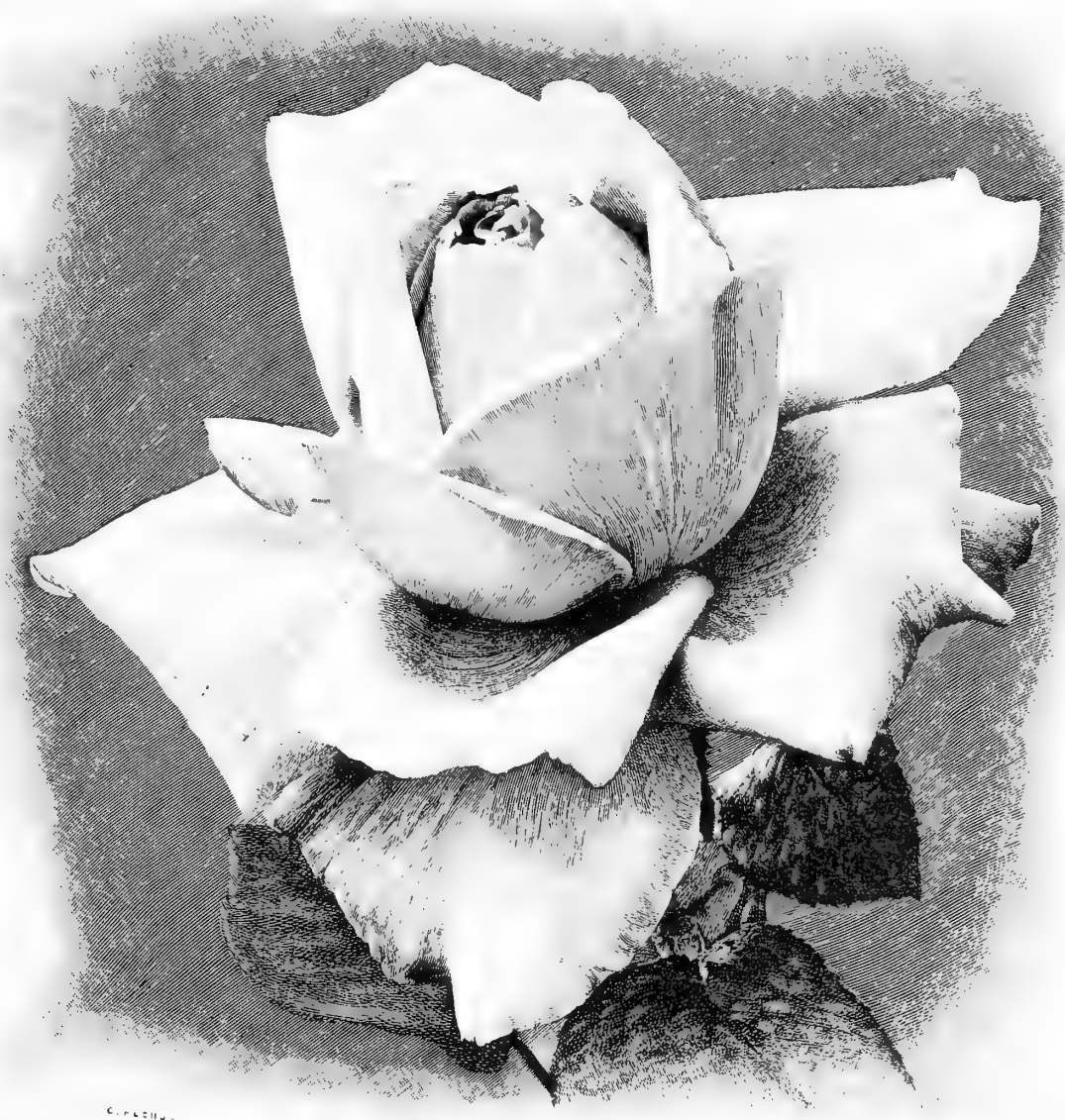
EASTERN CYPRESS AT ICKWORTH.—This tree is of such doubtful hardiness in many parts of our country that we should hesitate to plant it, although we have here and there seen, as at White Knights before the hard winters came, some good trees of it; also near the coast in mild districts we may plant it here and there. This being so, we were the more surprised to see many trees of it at Ickworth in rude health and giving a very distinct and graceful appearance to that garden; the effect is that of a real Italian garden, sheltered, graceful, varied, and quite the opposite of the usual British-pattern "Italian garden," with its Irish Yews, hard lines, and little yellow dots of *Arbor-vitæ*.

IN THE WEST AFRICAN FOREST.—The dense forests through which our road lay are very fine. They may be the breeding ground of deadly diseases, but they are truly beautiful to look at. They consist of what I may describe as three distinct storeys. The ground-floor storey is made up of the ordinary close, tropical bush of from 15 to 20 feet in height, through which the forest trees of equatorial Africa push their thick lofty stems and big branches to form the second storey. These are of about the same size as the great forest trees of Western Europe. The third storey, towering over and above the other two, is formed by the straight and smooth-stemmed Cotton Tree, with its mushroom-shaped roof, many being over 150 feet in height. The big parrots of this region, when perched upon them, look no larger than English robins. This tree has no branches until close to the top of its pillar-like stem, where they shoot out almost horizontally, like the iron stays of a great and shallow umbrella. A large inverted green saucer placed on the nozzle of a tall and massive silver candlestick would convey a good idea of what the Cotton Tree looks like. Its polished stem of soft and pearly grey tapers little, being great in circumference all the way up to where the branches spring. The stand of the candlestick represents the roots, which go little into the ground, but mostly rest upon it. Rising up from the outer edge of that stand are great protecting buttresses, often covering a circle of ground that would measure 200 feet in circumference. Those ribbed buttresses add much to the stability of the tree and to the magnificence of its imposing appearance. . . . But what strikes the stranger most in this weirdly dark forest scenery are the thousands of twisted creepers and winders of all shapes and sizes which cross and recross one another, the smaller ones hanging in tangled masses festooned between the trees like the tangled locks of some giant Meg Merrilees. Many of these creepers are thicker than a man's wrist, and to get through this lower jungle you must cut them, for none will break. Twisted round them again, are usually others of a tougher and more cord-like quality, which compress the expansion of those round which they twine, pinching them into the spiral irregularity of a corkscrew. These great winders hanging from branch to branch in vast quantities at every angle and in puzzling irregularity, bar the way to all who would pass in any direction. . . . Look down any chance opening in the depths of this awe-inspiring forest, and, as the gentle wind sways about these ropes and coils of brown creepers, one thinks of the loose shrouds, broken stays and halyards and confused masses of rigging that hang from masts and yards of the old and once beautiful "three-deckers," still to be seen as ruins in the neglected back waters of our naval harbours. —LORD WOLSELEY'S "Story of a Soldier's Life."

ROSE "PAPA LAMBERT."

THIS is one of the good new Roses, and of proved merit. Its growth is sturdy, not too tall, breaking freely when cut back, and ripening well in autumn; it also transplants well. Its long pointed buds show fine depth of petal, and the

Roses and profuse in flower, making but little waste growth. Though often classed as a show flower it is well suited for grouping and may be used with good effect with the finer garden Roses. For some years it has now been one of the kinds most in demand until growers



ROSE "PAPA LAMBERT."

(Engraved for "Flora" from a photograph by G. Champion in the old Rose Gardens, Colchester.)

blossoms, of large size and fine form, are of a beautiful pinkish-rose shading to carmine in the centre, with something of the old Cabbage-Rose fragrance, and carried upon stout stems. It is free from the roughness of some large

have had difficulty in supplying their customers. Our engraving, from a plant in Messrs. B. R. Cant and Son's Rose Gardens at Colchester, does but justice to the rare beauty of this fine Rose.

ROSARIAN.

THE ALMOND.

FOREMOST among the hardiest of early-flowering shrubs are the Almonds, and few trees need so little care in varied soils and aspects. Twenty degrees of frost and a bitter wind cannot destroy their beauty even in full flower, and, indeed, a light frost often deepens the colour of the dainty petals yet without trace of injury. In the south of France the Almond is often in full beauty in January, clusters of large old trees lighting up the hillsides; in Spain and Asia Minor it flowers in February; with ourselves most commonly in March, and in Norway not till June. A lover of dry warm soils, its fleshy roots striking deep and enabling it to resist where few trees can grow, it is much used upon the stoney, scorched hillsides of the lower Rhone Valley. Grafted on the Plum as with us, it shows little preference as to soil, but in heavy ground it should be more sheltered than on warmer land. It may be grown as a shrub or to a stem, or the two forms may be grouped in masses, an arrangement which, seen upon rising ground and at a distance, and thrown into relief by a protecting belt of evergreens, shows it to the best advantage. Its growth is free and fairly rapid, but somewhat straggling, needing care to keep a good outline, though trees planted side by side often show a very different habit. The Almond is only grown in English gardens for its beauty, though in some years the fruits ripen in many parts of the country, and are little inferior in flavour to those of southern Europe; but the fruit germ is so often killed by spring frost that this only occurs at

intervals. Though the Almond is almost entirely free from insect pests its leaves are liable to the attacks of a fungus which causes them to curl up and turn a deep red colour. When this happens the leaves should be carefully picked off and burned.

For many hundreds of years the Almond has been cultivated in Europe and parts of Asia, and like many such trees it has been found difficult to fix its native home. Certain kinds grow untended in Asia Minor and Turkestan, and wild trees of the common Almond are found among the mountains of Algeria. Many named kinds bearing nuts with hard and soft shells are grown in the south of Europe, and are profitable only because of the slight care required. Much of the fruit is used locally, and in a green state is a favourite summer dessert fruit; only the finest hard-shelled kinds are exported. From the earliest times poetic races have been accustomed to look upon the Almond as sacred, and have explained its early-flowering in various ways; to this day the peasantry of Provence have a pretty legend ascribing to it a miraculous origin.

Small plants and cut branches of the Almond are sometimes used for forcing in gentle heat. If cut when showing colour the buds will open indoors, and their delicate pink petals lasting long in beauty are a great gain at a time when flowers are scarce. Leaving out the many fruiting varieties which are without value in English gardens, the following kinds are grown for their beauty as flowering shrubs, and are es-

pecially suited to town gardens of small size. In accordance with the latest ruling the Almond is now grouped with the Plum in the genus *Prunus*:—

THE COMMON ALMOND (*Prunus Amygdalus communis*).—A low tree beautiful in flower, reaching at length some 30 feet and picturesque when old. Its flowers are borne with great freedom and with fine colour effect, varying from white to bright rose colour. Native of North Africa. Its upper branches are thorny in the wild tree. Used in the South of Europe as a stock for grafting the better kinds. Having

been in cultivation from the earliest times there are many varieties. Forms of the Common Almond, some of them coming fairly true from seed while others need grafting. The common sweet and bitter kinds may be raised from seed, but their character is so uncertain that seedlings of both sorts come in the same sowing. The most distinct varieties are:—

THE BITTER ALMOND (*P. A. c. amara*).—This form is not so free in growth but its habit is more regular. Its flowers, too, are larger and pale in colour, with a blotch of bright rose at the base of the petals.

THE SWEET ALMOND (*communis dulcis*).—A tree earlier in bloom than *amara*, with flowers smaller and deeper in colour, and long leaves of greyish-green. Its fruit is the Almond of commerce.

THE DOUBLE-FLOWERED ALMOND (*communis flore pleno*).—A form with large full flowers of deep rose in the bud and when first expanded, paling with exposure, but lasting long in beauty.

THE LARGE-FRUITED ALMOND (*communis macrocarpa*).—A beautiful tree of good habit and the earliest to flower, though for this reason it rarely fruits. Its flowers measure 3 or more inches across, with broad petals of pale rose, the leaves and fruit are also larger than in the common kind. It does well in almost any soil, and, being little injured by smoke or fog and of neat erect habit suited to small plots of ground, is a good tree for town gardens.

THE ALMOND-PEACH (*communis persicoides*).—A strange form of the common almond grown sparingly in southern Europe but rare in English gardens. It is a cross between the

Almond and Peach, though at one time held to be a development of the Almond, marking a stage of transition between it and the Peach, with characters belonging to both. In leaf it resembles the Peach, and its fruits show a more fleshy coating than the Almond. It is grown at Kew as a flowering shrub, and beside being handsome is very early in flower.

Among minor varieties of the Common Almond are a pretty-weeping form, as free in flower as the erect growers and useful for small lawns; an early white kind, flowering the first days of March and very distinct in its stout rigid growth, reaching a large size at maturity, scarce in gardens, but growing as a fine tree in Turner's Nurseries at Slough. There are also several variegated sorts without value and one of some merit. This is a scarce French shrub with none of the weakness so often associated

with variegation, but of free vigorous growth and leaves boldly blotched with white, which so far from injury gain brilliance by exposure.

THE HOARY ALMOND (*P. A. incana*).—A shrub held by some botanists to be a form of the Dwarf Almond, which it somewhat resembles in growth. It is a pretty low bush, only 2 or 3 feet high, and a native of the Levant and Asia Minor. It bears in April deeply coloured flowers upon its slender spiral shoots, followed by narrow leaves covered with fine white hairs on their under surface, from which the plant derives its name. A handsome shrub but rarely seen in English gardens.



THE DWARF ALMOND.

THE DWARF ALMOND (*B. A. nana*).—A low much-branched shrub common upon the plains of south and Asiatic Russia, and of much beauty in English gardens. It rarely exceeds 3 feet in height, with long slender twigs completely wreathed in March by flowers of bright rose colour, lasting for several weeks. The leaves are smooth, narrow, and of dark glossy green, and the fruit like that of the Common Almond, but much smaller. It may be increased in several ways, but the simplest is by suckers, which spring freely around strong plants. Being unaffected by drought it is useful upon raised parts of the rock garden or similar dry spots. It is grown in several varieties, all of which have much to recommend them. There are two white-flowered forms, one a near counterpart of the above, but often not a pure white, and a second with larger leaves and of bigger growth, known as *nana Besseri*, and very free in small white flowers. *Nana campanuloides*, a distinct plant to be found in French nurseries, bears many pale rose flowers, which remain partly expanded with almost a bell-shaped appearance, and in their profusion are highly attractive. There is also to be met with a variety known as *nana microphylla*, an erect and graceful shrub bearing small flowers, often semi-double, of a bright rose-colour, marked upon the outer tip of each petal with a deeper crimson spot. It seems uncertain whether this plant is really a form of *nana* or related to the true Small-leaved Almond (*P. A. microphylla*), a low shrub of like habit found at a height of several thousand feet in the mountains of Mexico, but otherwise unknown in gardens. The plant known as *nana georgica* is uncommon but not so good as brighter forms of the Dwarf Almond. While more vigorous in growth, reaching the size of a low erect tree, its flower-petals are so small that their effect is partially lost.

THE SILVER ALMOND (*P. A. orientalis*).—A bush or low tree found in the Levant, and in its own country nearly evergreen. In English gardens it is a rather tender shrub, liable to injury in severe winters and therefore only to be recommended for sheltered spots in mild districts. It flowers in March or April but less freely than other kinds, and is more useful for the silvery sheen of its short rounded leaves and young shoots. In collections of shrubs its

appearance is striking and distinct. Rare in gardens, though introduced in 1756.

THE SIBERIAN ALMOND (*P. A. siberica*).—Possibly only an eastern form of the Dwarf Almond, which it resembles in size, but its light wand-like habit of growth, and long fine leaves like certain Willows, make it a very distinct plant.

BOISSIER'S ALMOND (*P. A. Boissieri*).—A slender bushy shrub of uncertain origin and now rare in gardens. It was raised in France some score or more years ago from seed sent from the Levant as that of the Silver Almond, but proved different from any known kind. It flowers in April with great freedom, bearing large stemless flowers, flushed with rose, thickly covering its long erect shoots. The thick leathery leaves are short and narrow, dull green above and greyish beneath, and its fruits, ripening early, are clothed with short hairs. A pretty and useful shrub, flowering later than most other kinds.

The true parent of the Peach is now held to be *Persica Davidiana*, grown in English gardens as shrubs with beautiful white or rosy flowers, opening very early in the year, and often classed with the Almonds in trade lists.

MOSAÏCULTURE DEFINED.—Cela consiste à diviser le terrain en carrés, en ronds, en ovales réguliers, puis à subdiviser ces carrés, ces ronds, ces ovales, en petits compartiments dessinant des figures comme du papier peint au moyen de fleurs, de feuillages, de petites plantes de diverses couleurs ; c'est simplement hideux et ridicule ; au moyen de petits artichauts, de petites jourbarbes, appelés pour le moment "echeveria," on trace des armoiries, des drapeaux, des enseignes ; on écrit des noms, des devises, des opinions politiques. Ce système de coupable jardinage rend ridicule un des plus charmants coins de la terre, l'*Isola Bella* du lac Majeur. Outre les dessins du buis, il y a, comme il y avait jadis dans nos parterres français, des dessins pratiqués au moyen de petits cailloux et de sables de diverses couleurs. Il faut que les hommes de goût, placés de façon à exercer quelque autorité, s'opposent à l'invasion, à la restauration de ces coûteuses, ridicules et absurdes puérités. Il ne faut pas que cette "mode," imitée encore une fois chez les autres peuples, fasse donner de nouveau à ces jardins bêtes, tristes, grotesques, le nom de jardin français ; à bas la mosaïculture ! à bas même les echeveria, s'il est nécessaire, dont quelques-uns pourtant sont d'assez jolies plantes ! Quant à la mosaïculture et à l'art des jardins, il faut se souvenir que "l'art est le choix dans le vrai."—ALPHONSE KARR.

THE HEPATICAS (*Anemone hepatica*).

CHEERIEST and most welcome of early flowers, the Hepaticas are among the oldest plants cultivated in gardens; and, though not found wild in Britain, are common in mountain copses and woodland over a large part of Europe and North America. So old and so familiar were they, even in cottage gardens of a past generation, that there seemed little of newness possible to them, until, two years ago, the double white Hepatica, long talked of and often treated as a myth, came to light at last and aroused fresh interest in these charming mountain plants.

The Hepaticas will not thrive in all places alike. Around large towns with their smoke and fog they are never quite happy, losing their leaves in winter and with them much of their beauty; compact and heavy soils are also disliked by these plants of the hills. Where they do not succeed in existing soil good results are often got from raised borders of well-drained compost. The question of soil is one of locality. In our southern and eastern counties shade would be more needed for their successful cultivation than in the west or north. With sufficient moisture most kinds thrive best in half-shade or rather screened by summer-leaving trees and at other times exposed to light and air. In light shade the plants keep low, and flower freely, setting seed well, and having their leaves finely marbled. In shadier spots their growth is larger and the stems more developed, but though

lasting longer the flowers remain closed on dull days and often fail to seed.

To see the Hepatica in its native beauty one should see it upon the southern slopes of the Alps, where it is one of the mountain plants that

The Hepatica at Home.

creep nearest the Mediterranean wherever the hills approach the sea. Its favourite haunt is woods of Oak, in which it is sheltered from the summer glare and yet freely exposed until its season of flower is past, while in autumn the falling leaves drift thickly into the nooks and crannies loved of the plant, providing Nature's own shelter and also food. With the first genial days of spring their buds begin to expand, until in March and April, when the snow has gone and the sun is hot at noon, their tufts of colour spread as a vast sheet of blue in every tone and shade, forming a dense carpet throughout the belt of woodland, varied here and there by clumps of wild Narcissus, by pallid Asphodel, or quaint wild Orchids, and mingling with Primroses, and the pale blue Italian Scilla. Without stirring more than a few yards it is possible to fill a sack with roots, if minded to enjoy their beauty nearer home. A great green lizard pops up over a stone to see what the stir is about, and at long intervals a peasant goes by on his mule, whose spreading panniers brush the growth beside the narrow track, while in his wonder at your occupation the rustic almost forgets to give you his good-day. But for the rest one is in a world of blue: the bluest of blue skies overhead, a blue haze upon the further hillsides, in the distance the deep dark

blue of the Mediterranean, and around and at one's feet that all-pervading azure tapestry.

The culture of the *Hepatica* is not difficult, consisting rather of care in little

Culture. details. The first is to find the place and soil

best suited; if too heavy the ground should be lightened by road-scrappings and leaf-mould until it is porous, well-drained, and deep enough for the mat of long roots. When well planted *Hepaticas* may be left for many years, with only an occasional dressing of rotten leaves or manure to correct their tendency to rise out of the ground; they should seldom be disturbed at the root, but massed in a bold way where they can be left untouched to spread in the true woodland way, or, where a special border is prepared, it should be given up to them. In time fine clumps will result, glowing as a cushion of flowers in spring, and, when well grown, sometimes a foot across. When old tufts show exhaustion by losing colour, they should be taken up in early autumn before growth begins, and after soaking in water, divided into sections by carefully separating the long black roots. If skilfully done the plants soon recover the check and grow with renewed vigour, and fresh rich soil will always improve their flowers.

As a whole the group is varied and uncertain in colour, with flowers of blue, purple, and lilac in many shades, passing through mauve to pink and deep rose, with two or three forms of white flowers. The shape of the flowers is no less variable, composed of petals broad or narrow, long or very short, nearly

flat or again cup-shaped. The large variety that may be grown from seed makes the raising of seedlings very interesting, and the most vigorous plants are to be had in this way. The seed should be sown as soon as ripe, either in the open where it can be kept evenly moist (an old way of securing this being to cover the bed with bricks or boards), or in boxes of sand and cocoa-fibre. Many do not germinate until the spring, and must then be pricked off and grown on in light soil enriched with cow manure, coming to flower mostly in the third year. The resulting range of colour is often large, and includes flowers that are prettily shaded and edged. The different varieties, which are roughly classed as to colour, bloom at rather different times, beginning with the pretty large-flowered *H. angulosa*, followed by the double red form, the singles in blue, white, and pink—roughly in the order named—the last being the delicate double blue kind. They keep in beauty from one to two months, the time depending upon their position and the season, and apart from their graceful effect in shaded border or the edges of woodland, their cut blooms are of value for button-holes and small vases. In many gardens a few plants are wintered in frames and flowered under glass, to provide earlier and perfect blossoms for decoration; plants so sheltered generally seed with freedom. Cold, spring winds, heavy rains, and early slugs are their worst outdoor foes; the last may often be scared by a few wood-ashes sprinkled round and over the budding tufts. When flowering is done the new

leaves appear, deeply cut and clothed with silky hairs, and are green at first, with a reddish tinge at maturity; these leaves should remain as a shelter to the crown throughout the following winter, and where they keep in good condition the plants never fail to do well.

Though full flowers in the other colours have long been known, if the double-white kind ever existed in gardens—a matter of much dispute—it had certainly disappeared until a single wild plant was found by a lad when roaming in the forests of the Hartz Mountains, and that plant, carefully increased, has given us the long-desired double-white Hepatica. It is of good growth, free and vigorous, bearing its pale rosettes, which are as large as the robust double-red, well above the foliage, and when more common is likely to be of value for cut-work of all sorts. Grown as large tufts in pans, like those shown by Miss Willmott before the Royal Horticultural Society, its beauty of form and purity of colour is undeniable. Increased solely by division, it will be a scarce plant for some time to come.

The older forms of these woodland Anemones are so well known as to require only a rapid summary. All the garden Hepaticas belong to two species, though wild and garden forms are innumerable.

THE GREAT HEPATICA (*Anemone angulosa*).—A robust plant from the east of Europe, growing from 8 to 12 inches high, and bearing flowers of sky-blue or mauve colour, 2 inches or more across. It is the earliest to flower, opening in February and beautiful when grown in

rich soil in a peat border or rock garden. It spreads by long underground stems, bearing finely-cut leaves which are woolly in some varieties. Though less sensitive to smoke than the common Hepatica, it is not at all free in some gardens, but richly beautiful where it succeeds. It may be raised from seed, but there are fewer forms than with the smaller kind. They include *atro-cærulea*, with a larger flower of deep purple-blue and of pleasing irregular shape; a semi-double pale lilac kind, also very pretty; an early star-like form with very narrow pale petals; one or two forms inclining to rose-colour; and a dark flower produced with leaves silvery from their long silky hairs. Syn. *A. transsilvanica* of Beck.

THE COMMON HEPATICA (*Anemone hepatica triloba*).—A plant of 4 to 9 inches, with many flowers much smaller than in *angulosa*. Roughly classed as to colour and form of flower as follows:—

SINGLE BLUE.—The common form varying in tone from pale lavender to a fine shade of sky-blue (*cærulea*), and to a rich deep blue of great brilliance (*splendens*). Easy to grow and early in flower.

DOUBLE BLUE.—A scarce form, variable and very fine at its best, but delicate and slow of increase. It is best divided in September and wintered in frames, indeed in many gardens it is always grown in pots. It flowers after other kinds in spring and sometimes bears a few pale flowers in the autumn, which have at times passed for blooms of a double-white kind. Its leaves are more rounded than in other kinds and more richly marbled. Grown in several forms, of which the best is *Royal Blue*.

SINGLE PINK.—A beautiful little plant, fine in shape and colour but less robust than the full-flowered plant, and delicate in many gardens. Fine colour shades exist, from a pearly rose-grey to bright pink.

DOUBLE PINK.—A kind of free robust growth, with a good constitution and fine effect. Its tiny rosettes, shading from pale rose to deep pink, come very early and last long in beauty. One of the best hardy spring flowers.

SINGLE WHITE.—A charming flower of large size, pure white or flushed with rose inside and upon the outside of the petals. The anthers are many and brightly coloured, taking

in one form a fine red colour in good contrast to the pale petals. Useful for cutting and of free growth.

BARLOW'S HEPATICA (*triloba Barlowi*).—One of the best forms, hardy, constant, and a rich purple colour, very distinct and showy, finely contrasted with a dense cluster of pale stamens. Flowers very early and succeeds in most gardens. The size and brilliance of its flowers and their long stalks make it one of the best for cutting.

Other sorts distinct in character but of small garden value are *triloba acutifolia*, with sharper lobes (sometimes five in number) to the leaves, and flowers of a pale mauve or greyish-pink smaller than the common Hepatica; the calyx is also much developed and the shape of the corolla almost tubular. Central United States. A second structural variety more curious than showy is *sessilata*, with dark flowers in which the green calyx is developed far beyond the petals; while in *variabilis* the brightly mottled leaves are the main feature.—B.

OF CONIFERS.—[To the Editor of FLORA.] SIR,—The mania for the raising and sending out of so-called varieties would be better if controlled a little by public taste. Among the numerous varieties I doubt if any could be named that would compare in value with the wild tree. In the Kew list of conifers, taking Lawson's Cypress on page 37, I find a host of variegations as to colour of foliage are considered worthy of mention there, not one of them worth a farthing. Then we come to variations of habit, and they are also poor when they get beyond the nursery stage, the close ones often rotting in the middle. Page after page of the list is given to this enumeration of forms often monstrous and useless. I have lately visited collections of conifers which were well grown and instructive, but marred by the variegated and ugly forms of conifers, which gave a spotty look. Many of them, indeed, were in a dying state, and taking up the places which might have been given to kinds of value, or even to the better grouping of kinds which we accept as the best. We are used to these sort of enumerations in trade catalogues, but it is a surprise to me to find them in the Kew list, three pages being devoted to varieties or distortions of one species, mostly fitted with Latin names. It is not the improvement, but the degradation of the Pine that is affected by the practice. As to the great public, one Latin name seems as good as another, and hence we see endless attempts to grow this varied rubbish, even where the trees they have arisen from are not seen. And who has ever seen a variegated example come to anything but an ugly death?—A PINE-LOVER.

MAGNOLIA PARVIFLORA.*

THIS fine shrub first flowered in this country in 1894 and is still rare in gardens; it is hardy and beautiful, though not quite so showy in colour as some kinds. The flowers are large, handsome, and fragrant, appearing from the end of May into July, when the tree is in leaf and other kinds of Magnolia have done flowering. It forms a bush or small tree of strong free growth, with rounded leaves about 5 inches long upon long stalks which, with the nerves and sometimes the whole of the under surface of the leaf, is covered with short reddish hairs. The flowers are larger than its name implies, being 4 inches across, composed of six petals forming a cup-shaped bloom of waxy shell-like purity, fading to a rosy yellow. There are three outer and drooping sepals of creamy-white, but the flower owes much of its charm to the contrast of its green centre and the ring of rich crimson stamens within, and the fruity perfume which often pervades the air for some distance around the bush. In America, where it was grown for some years before reaching this country, it has been largely imported from Japan, where it is common in gardens and is said to be found wild in the hill-ranges of Nippon. Though normally flowering upon the old wood, in very fine seasons it has been known to flower again in the autumn upon its new growth. It is also useful as a pot plant, remaining in beauty for many weeks in a cool conservatory. For charm of flower and value in the flower-garden this shrub is worthy to rank with any flowering tree.

* With coloured plate from a drawing by H. G. Moon at Kew.



U. WHITE ARBUTUS.

THE WITCH-HAZELS (*Hamamelis*).

IF they flowered when gardens are at the full tide of summer beauty the Witch Hazels might pass well-nigh unnoticed, but, blooming in mid-winter when flowers are few and gardens at their dullest, they are of value and their beauty better appreciated. To come across one of these little shrubs opening its flowers, undaunted by frost and snow, never fails to rouse a thrill of pleasure, coming, as one French writer has aptly put it, "like Noah's olive-branch after many days of deluge." As shrubs of small growth they should be placed close to walks, the peculiar form and beauty of their flowers being best seen near at hand. The Japanese kinds form shapely little trees of neat outline but slow growth, even the Tree Witch Hazel (*Hamamelis arborea*) rarely rising above 8 or 10 feet; they are therefore quite in place grouped in the angle of a lawn or the fore-front of the shrubbery. The effect of the narrow-petalled flowers being a little "thin" it is always a gain to group several plants together, and so massed, when seen in bright sunlight and thrown into relief by a background of dark foliage or glittering snow, they are conspicuous with a beauty unlike any other of our hardy shrubs. Severe frost at times destroys the open flowers, but the buds are uninjured so that the display is renewed with milder weather and lasts in all through several weeks. The older American kind is not so good, being a little untidy in growth and less striking in flower, but blooming when it does in late autumn and

early winter all flowering shrubs have their value. Small pot-grown plants of the showy Japan kinds when flowered under glass are pretty in the conservatory, lasting in beauty for a long while and brought to perfection without heat; cut branches, too, will freely open their buds indoors, but the shrubs are too slow in growth to allow of much cutting. They are not at all particular as to soil and aspect, but do best in a good free loam and where the winter sun can light up their flower-clusters.

The new Chinese kind (*H. mollis*) discovered by Dr. Henry in 1887 is as yet hardly known in gardens though to all appearance a plant of value, being quite hardy, of good growth, and the brightest of all in colour. The four species of *Hamamelis* are classed by themselves in a small order of rather uncertain rank, some botanists placing it near the Ivy and Dogwood groups, and others nearer the Saxifragas. The four following kinds are now in cultivation :—

THE TREE WITCH-HAZEL (*Hamamelis arborea*).—The largest and best of the group, forming a neat erect shrub with a much-branched head of pale yellowish shoots, and a neat outline. It is the earliest to flower, its buds opening in succession from the middle of January in stemless clusters of small crimson tubes each bearing four long golden petals, very narrow and quaintly crisped and twisted but of glowing effect under strong sunlight. The leaves, coming later, are oval, upon short stalks, rather rough in texture and strangely ribbed, the veins being deeply sunk on the upper and standing out on the under surface of the leaf; in the autumn they take on pretty tints of red and yellow. The plant does not seed in our gardens, but in Japan is said to bear small nut-like fruits covered with a fine down such as is often found upon the growing shoots. It is

found in the mountains of Japan as a small tree of 20 or more feet, and, though first imported in 1862, it remained for many years almost unnoticed. It is of slow growth but young plants soon flower; old trees covered thickly from top to bottom with their peculiar starry clusters are very attractive. Increased by grafting upon seedlings of the American Witch-Hazel.

THE JAPAN WITCH-HAZEL (*H. japonica*).—A shrub of dwarf growth and flowering later than the Tree Witch-Hazel in February and March. It never grows much higher than 5 or 6 feet, with stout grey shoots upon which appear the three-flowered stemless clusters, identical in shape with those of *arborea*, but less striking in colour, the red calyx inclining to brown and the petals to a paler yellow. Its leaves are similar but a little larger. Also from the mountain region of Japan. The variety known as *Japonica Zuccariniana* is so like its parent as to be almost indistinguishable save in its increasing lack of colour; it is therefore of small value.

THE HAIRY WITCH-HAZEL (*H. mollis*).—A tree from the south-west of China, but, like all the Witch-Hazels, quite hardy in England and of good growth. It differs from the other kinds in its much larger leaves (5 inches long by 3 inches wide) of different shape and covered beneath with a dense felt-like coating of hairs. Its flowers resemble those of the Japanese kinds but the yellow petals are perhaps a trifle larger and less waved, and are the brightest of all in colour, though coming rather later than those of *arborea*.

THE AMERICAN WITCH-HAZEL (*H. virginica*).—An old shrub long grown in gardens for its irregular yellow flowers of peculiar starry shape, coming from October to December. Opening in long succession their display is never showy, but not without interest at such a season; in a fine autumn a great number of flowers are seen in beauty at one time and it gains in effect. Its leaves are large, rough, and hazel-like upon a loose open bush of free growth but inclined to be straggling and untidy in outline. Eastern United States; introduced to English gardens in 1736. It is a shrub of some medicinal value and formerly held in high esteem by the Indians for its virtues, and by the superstitious for its reputed property of

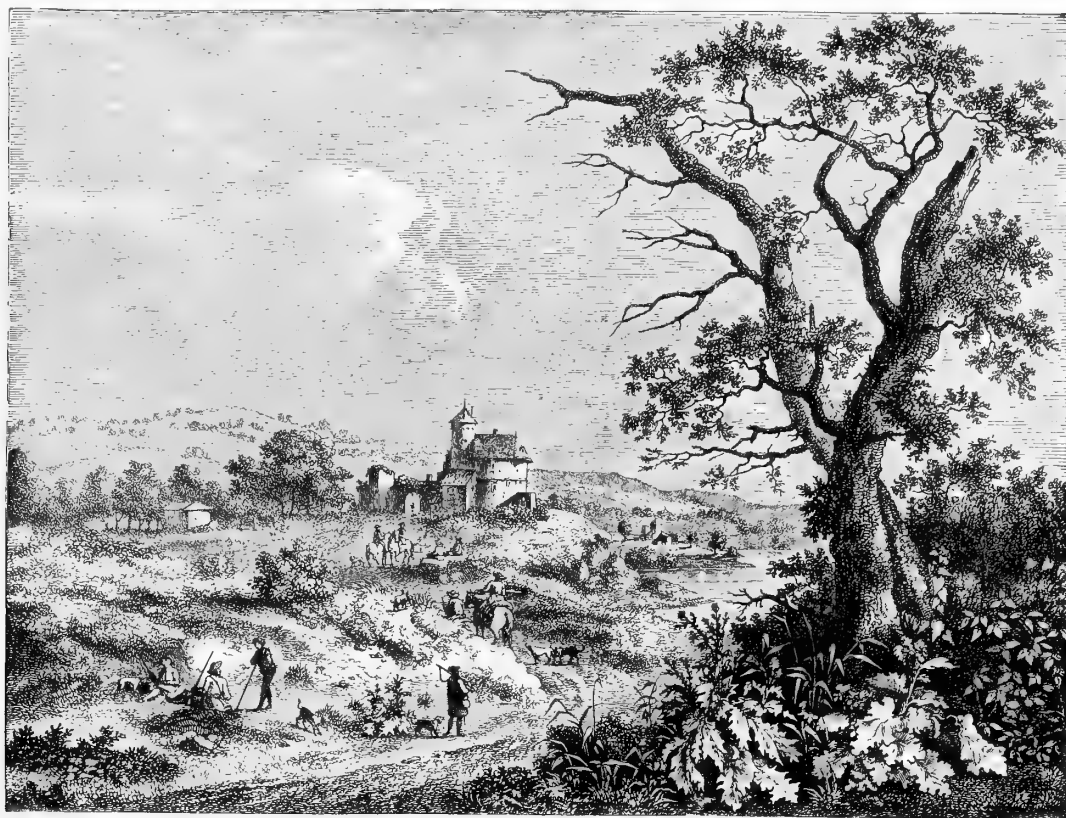
indicating deposits of hidden treasure. A red-petalled sport or seedling has recently been found growing upon the hills of New York state, and may prove of value for our winter gardens.

THINNING FOR TIMBER.—We have lately heard so much about the English way of over-thinning in woodlands, that it may be well to show that it is easy to go too far in the opposite direction, and that it is a question of degree and of kind. The woodland question is so mixed up with that of kinds, soils, climates, markets, and conditions, that it is useless to lay down hard and fast rules with regard to it. The worst blunder is in not maintaining the forest canopy. The art is to thin to the right degree for each kind, and use, and yet not lose this canopy; and this is a question of common-sense, and the size and quality of timber wanted. We cannot look at a lot of Oaks 200 years old and only 19½ inches thick, and at another lot of the same age twice as thick again, without asking as to the cause of the difference. The former, with boles 65 feet long, give about 66 cubic feet of timber each, and are worth £3 19s. apiece. The latter give 192 cubic feet, and are worth £23 16s. apiece. The one wood may contain 200 of the smaller trees to every fifty or sixty of the larger ones in the other; but, apart from the money gain, the difference in quality of material on the ground is not all loss, for many surplus stems will have been taken out as thinnings. There is no need for argument, however; the fact is convincing. Slow-grown, soft-wooded Oaks 19½ inches in diameter make poor planks, or may be, a little wood for cooperage, whereas the trees of greater girth are good for all uses. Let us thin out our crowded Oaks; we shall in this way reap other advantages also. Left to itself, the Beech forest, handsome as it is, does not turn over the capital, and the value of the timber does not increase in proportion to its size, or anything like it, as it does in the case of the Oak. But thinned at short intervals it gives a constant supply of abundant produce, even as much as half the current increment. These forests, under timid foresters, are allowed to sleep; whereas in Denmark, in bolder hands, they realise 55 to 65 cubic feet in thinnings, or almost as much as at the principal fellings. In broad-leaved high forests of mixed kinds it is another story. The Ash if it cannot get ahead of the rest languishes and dies. The Oak also is sore beset among the dense leaves of the Beeches, Maples, Elms, and Hornbeams even. Its finest branches are killed off and promising trees are ruined. In certain high forests one may see the last of the Oaks being strangled by the Beeches, struggling by devious ways, as thin as poles, 80 feet long and a few inches thick, only to die eventually as slender starvelings.—INDIAN FORESTER.

LANDSCAPE AND WOODLAND PICTURES BY THE MASTER PAINTERS.

PURSuing our plan of giving examples of the work of the greater landscape painters, we have this month to introduce one of Wijnants', who, though

ing should be. Not so much is known of his life as of those of other great Dutch artists, but he is believed to have been born in Haarlem about the year 1615. His pictures are to be seen in many of the great galleries of Europe.



A LANDSCAPE BY WIJNANTS.

not among the greatest of the Dutch painters, is yet extremely interesting for his true drawing of the trees of his country. He was an excellent observer, but, like most of the older artists, was governed by the conventionalities of his day, and hence his pictures are often made up of separate incidents very well drawn, rather than giving the whole effect of the scene as viewed in beautiful states of nature. This has the effect of weakening the attention. His smaller works are often simpler and truer to one view, as a great landscape paint-

THE SELBORNE YEW.—Several of our readers have pointed out that R. S. J. is mistaken in saying that White's "Natural History of Selborne" contains no reference to this tree. E. T. B. Reece kindly writes as follows:—R. S. J. on "The Yew in Hampshire" in your last issue was in error in supposing that Gilbert White took no notice of the magnificent Yew in Selborne Churchyard. I find that in Letter 5 on the "Antiquities of Selborne" he gives the circumference of the trunk as 23 feet and says that it supports a headsuitable to its bulk. He also states that it is a male tree and is probably coëval with the church.

THERE is no art or occupation comparable to planting. It is full of past, present, and future enjoyment.—SIR W. SCOTT.

RIVERSIDE COLOUR AT STRAFFAN.—At Straffan, Kildare, yesterday (February 16), the spreading masses of Snowdrops under the red-twigged Lime trees on the lawn gave quite a beautiful effect. They are on the lower lawn below the flower-garden and are occasionally flooded as the Liffey overflows, but this only seems to increase their vigour. Just at this season, however, the most harmonious colour at Straffan is of the crimson Dogwood and red Osiers alongside the now full-flooded river and extending from the island to the great bridge below. No words could give anything like an adequate idea of the soft and varied shades of colour, not alone of the planted banks themselves but of their still more soft and delicate reflections in the water below. This well-wooded river scene at Straffan shows how simply and naturally most cheerful and ever-varying winter effects of colour may be obtained, and especially, as in this case, near water. This river scenery from Straffan Bridge is luckily seen by many, as the Kildare Hounds meet or pass there often during the hunting season, and it certainly affords a lesson in planting for winter colour of an impressive kind, showing that some of the strongest and best effects obtainable in our home scenery are also easily obtainable by simple means.—F. W. BURBIDGE.

THE SPRING STAR-FLOWER (*Triteleia uniflora*).

THROUGHOUT Southern England in sunny gardens of light soil, few early flowering plants give better effect than this little South American bulb, while its price enables it to be used

in quantity and with the best effect. It is hardy on all soils, but in cold stiff ground it is apt to disappear. In more genial conditions it spreads fast into broad patches, and when used either as large irregular masses in open spots beneath trees, or (as I have seen it) planted in a long straight border of 200 paces and thick with flowers, its value is great. In spite of its name its flowers come very freely, and under cultivation, not infrequently in pairs. They vary a good deal in shade from near white to lilac and purple, and, in a scarcer form, to a pretty pale blue with narrow petals and a yellow eye. The best way is to plant in variety and let the colours mingle at will. In shape the flower is a little like the Lesser Periwinkle and about the same size, but with separate petals. It loves the sun, and is not in the least distressed by weeks of drought, unfolding its blossoms with the first warm days of March or April in a profusion over which the bees make merry. Unless planted to come up through evergreen trailers—and it is often useful with other bulbs to give colour upon such a groundwork when it is itself out of beauty—the plants should be massed closely, or the blossoms will suffer from heavy rain. A very good effect may be got by planting the bulbs thickly, mingled with clumps of the Scarlet Windflower (*Anemone fulgens*); they both delight in sunshine when well planted, and the contrast in colour is rich and uncommon. It is pretty also with the Lesser Periwinkle in its white and blue forms, but is less apt to spread with such a vigorous neighbour. In the South of France it is now naturalised in many parts and takes the place of the Snowdrop, which is apt to disappear. In warm districts in which the Star-flower may be coaxed out too early for its own well-being, it is best grown upon a warm border at the foot of a wall giving some shelter from wind and weather. Though charming upon the plant, the flowers are of no value when cut, owing to the strong odour of garlic given off by the cut stems. For use indoors the *Triteleia* is often grown in pots, blooming early with little heat, lasting long, and of the simplest culture. It is easy to have them in little pots for table decoration, and, unless their leaves are bruised, there is no unpleasant smell.

EXPERIMENTS WITH INTRODUCED TREES IN THE FOREST OF EBERSWALDE.

THE Forest Administration of Germany has not been afraid to establish nurseries and set apart wide tracts for experiments, the most important centres being in Bavaria and Prussia, in which is the forest of Eberswalde. These plantations are the most complete to be found within the German Forest Administration; the nurseries, enclosures, and plantations devoted to experiments with exotic trees occupy an extent of not less than 200 acres and are about thirty miles north of Berlin.

The experiments are directed by a high functionary whose reputation as a forester is well established—Landforstmeister von Dankelmann—by whom an exact register is held of all the observations that are made and the results obtained.

Generally the trees are planted in small enclosures for protection against squirrels which abound in the forest, or they are planted in bands some hundreds of yards in length, in which case they receive no greater attention than is bestowed upon ordinary tree plantations.

THE DOUGLAS FIR.—Covering an area of immense extent in the central and the western United States and British America, the Douglas Fir is found in a great variety of soils and climates, adapting itself well to these various conditions. It is very hardy, but averse to limestone. The lack of rain in summer might seem against it in North Germany, yet the plantations of Dou-

glas at Eberswalde do not appear to suffer in this respect. In all the plantings the trees are vigorous, and in those where the soil is at all fertile they appear to do admirably well. The oldest plantations are eighteen years old, and contain trees 36 feet to 45 feet high, and in parts where the soil is poor sand the mixed plantations present dense masses of young trees exceeding in growth many of the native Pines of the same age among which they are grown. In forest planting the Douglas Fir would therefore seem to have a future full of promise in the sandy regions, whether mountain, hill, or even plain, where the soil is not too arid in summer. In Germany it yields more wood than any other conifer under the same conditions. The question then arises, What use do the Germans expect to make of the wood of the Douglas Pine? The remarkable qualities of the wood obtained from American forests are limited to the earth wood which in any considerable extent is only obtainable from old trees, and the Americans, in cutting only the oldest trees, are diminishing daily the extent of their resources. A century and a half is a long time to wait, and only Governments can afford to invest for so long a period. If, however, even the young wood can be used in building, or in the manufacture of paper, it is certain that North Germany has in the Douglas Fir a tree of the highest economic value.

THE JAPANESE LARCH (*Larix leptolepis*).—This magnificent Larch reaches fine proportions in Japan, where there is an insular climate, cool and extremely

moist, the rainfall being not less than 6 feet. The conditions, therefore, are not nearly so favourable in North Germany, yet the growth of the Japanese Larch is remarkable at Eberswalde, as, indeed, nearly everywhere, save, perhaps, in Northern and Central Russia, where the superiority rests with the Siberian Larch, which is more apt to make the best of the short summer. Trees of the Japanese Larch at Eberswalde are either isolated plants or mixed with Lawson's Cypress or Red Cedar. Those planted close in lines have annually shoots often exceeding 30 inches in length. The fine green dense foliage of this handsome Pine gives it an appearance of great vigour. In mixed plantations of Japanese Larch and Lawson's Cypress, the trees being of like age exhibit a striking superiority of growth in the Larch, even to the extent of being twice the size of the Lawson.

THE WEYMOUTH OR WHITE PINE.—The Weymouth Pine occupies no great space in the experiments that are carried out at Eberswalde, and the conditions favourable to the growth of this Pine are only beginning to be understood. In Germany, more than in England or in France, it has been planted in parks and tried in forestry; deep, cool, and even moist sand suits it best. I have seen in the Rhine provinces fine close plantations of it. Its wood, which is very white and homogeneous, will certainly be in demand. The trees of it at Eberswalde are ten-year-old trees; their growth is excellent even in those parts of the forest where the soil is only of medium coolness.

LAWSON'S CYPRESS.—This tree enjoys in the North-western States of America or the maritime slopes of British Columbia conditions of climate which are very rarely present at Eberswalde, and the conditions of its existence there are varied as much as possible. The result has been to show that if the tree is hardy it is, on the other hand, exacting: where the soil is somewhat cool and rich in leaf-mould it does well, is very dense of foliage, and in quickness of growth is about a third less than the Douglas Fir. In the drier localities its development is not even half that of the Douglas, even as regards height, which means that the quantity of wood given by it is not a fourth of that produced by the Douglas.

HONOKI (*Cupressus obtusa*).—The trees of this species at Eberswalde are twelve years old, their verdure being remarkable, and their vigour satisfactory even in the less favourable situations. In quickness of growth they cannot compare with the trees above named, and, moreover, rapidity of growth is not in the nature of this tree; in Europe, at least, its yield of wood will therefore be restricted.

THE YELLOW WOOD (*Thuja gigantea*).—The failure of this fine tree at Eberswalde is complete; a result which surprises me extremely; but I see no reason why its condemnation should be pronounced as final, and the cause of its faulty growth would seem to be entirely cryptogamic. Every tree, even the youngest, is covered with withered twigs. The evil is general in all parts of the forest, but affects none of the

other introduced trees to the same extent.

JEFFREY'S PINE.—This is the only Californian Pine of large foliage that supports the rigours of the North German climate. The fine forest plantations of Baron von Borkheim at Wernheim near Heidelberg, on the other hand, can show the whole series of handsome Pines from the Pacific Coast. Jeffrey's Pine does well as an experiment. It is still very young, but its season of vegetation is very short in Prussia.

BANKS'S PINE.—The idea of including in experimental forestry the crooked Pine of Canada may seem a strange one, and the popular name of Scrub Pine is not promising. It is a dwarf tree, often bushy and spreading in northern Canada. West of Lake Superior the tree grows thickly in forests, is very slender, and of middling height. At Eberswalde it has shown, in addition to hardiness and facility of recovery, rapidity of growth in the first years, and precocious fertility, trees of six years having reached a height of 16 feet and yielded fertile seed. For clothing poor soils and for severe climates the tree is therefore useful, and the experiments with it at Eberswalde are not without interest, although it is probable the value of the wood may turn out next to nothing.

FALSE PITCH PINE (*Pinus rigida*).—The tree has been much planted in France and elsewhere by amateurs in the hope of obtaining Pitch Pine from it, deluded by the ancient name of Pitch Pine given to it in the Atlantic States of America, but not in the

southern states, where the true Pitch Pine (*P. palustris*) grows. As a hardy tree it will be found useful in cool sands, even those with water in cold districts but not arid. It is frequently met with along the coast of the North Sea, in Belgium, Holland, and in North-West Germany. There it takes the place almost of the hardiest maritime Pine. In the North German plain the tree for want of moisture finds no place, and the young plants at Eberswalde at six years old are not much more than 30 inches high.

THE SITKA SPRUCE (*Picea sitchensis*).—The oldest trees of this fine Fir are about thirteen years old, and some of them are already 23 to 26 feet high; taking into account the slow rate of the first year's growth this result is good. I was told that the results are encouraging in the regions close to the North Sea. The tree was much planted in Prince Bismarck's park at Friedrichsruhe, and I saw young plantations of it near Düsseldorf in rich sandy loam but very moist, and they were very vigorous. I have often observed in France that trees of this, if isolated, lose their tops, and I think that it should be planted close and kept so.

THE RED CEDAR (*Juniperus Virginiana*).—The tree is not at home in a sandy soil and rigorous climate, not that it is not hardy, but because it demands a long and warm summer, and much light and air. Where it has been tried it has been replaced by Douglas Fir. In the warmer parts of Germany it is grown for the sake of its heart wood, which is sold to the manufacturers of

pencils, who find the supply not nearly equal to their wants.

THE AMERICAN RED OAK (*Quercus rubra*).—The Red Oak of America could scarcely fail to be included in the experiments made here, for this tree is very hardy and not exacting as regards soil. The results have been most encouraging, the plots sown with acorns of the Red Oak are perfect in growth, but better still are the considerable stretches of twelve to fourteen-year-old trees grown in alternate lines with the common Oak. For fuel there is no reason to doubt that the Red Oak in North Germany will be found superior to the common Oak; for cabinet work its superiority has yet to be proved.

THE SWAMP OAK (*Q. palustris*).—I have seen some superb plantations in the neighbourhood of Düsseldorf. M. Joly, forester in charge of a fine estate at Heetorf, has published a note on this Oak, which has shown a marked superiority over the common Oak in his plantations; and in Belgium its fine qualities are well known.

THE HICKORY (*Carya amara*).—So far this tree has furnished the best results of all at Eberswalde as to its growth; of the qualities of its wood it is too soon to speak. It is well known that several of the Hickories and Walnuts furnish the famous hickory wood which is so much in demand for coach building and cabinet work, being at once a fine deep colour and of remarkable elasticity and strength. Trees of merchantable size have very nearly all disappeared from the United States, any new plantations, therefore, have a

manifest interest. At Eberswalde both Hickory and Walnuts are planted in long lines of seedlings alternately with lines of the Common Oak. The growth of the Oak trees has been superior to that of the Walnuts, and in favour of these the strongest branches of the Oak have been removed yearly so that the trees shall form a light shelter penetrable by air and light. The oldest plantations are fifteen to seventeen years old, and show a healthy growth. *C. alba*, *C. porcina*, and *C. tomentosa*.—These three species give promise of sufficient vigour, although inferior to that of *C. amara*.

THE CALIFORNIAN MAPLE (*Acer negundo*, var. *californicum*).—Attention has of late years been drawn to the extremely quick growth of this, and some plantations of it in the Orleanais and in Sologne are very interesting, and I have made trials of it at Barres, where some 300 acres of fallow land have been turned into plantations of diversified kinds. The trees at Eberswalde are eight years old, and they have already a height of 40 to 45 feet, which agrees with the results I have obtained at Barres.

MAURICE L. DE VILMORIN.

A NATURAL BROOK IN LEVEL COUNTRY.—“What pleased me most in the park was a brook, a natural stream, with crystal-clear water rushing over blocks of granite. I could not have believed there was so great a fall in flat Russia, from the Valdai Hills to the level of the sea. It is unaccountable to me how landscape gardeners in flat countries will contrive waterfalls instead of using their labour to make, at least for a short distance, a murmuring brook. The artistically victimised water is sent over a plank into a six-foot-deep chasm, whence it seems to creep away ashamed, not knowing where to go.”—COUNT MOLTKE.

FLORA

AND SYLVA.

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WASTE IN PLANTING.

EVERYTHING which tends to simplify the work of planting is a gain in all ways, and much of the work given to it is needless and wasteful—particularly trenching and draining—two costly labours. I live in a cool country with a wet soil and never drain for any kind of planting in woods, adapting the plants to the soil, the true way. There are trees, American and European, that will almost stand in water and be none the worse for it. Another costly labour is trenching, and, I think, needless. I have young woods of Pine planted in arable fields, and not of specially good soil, which people say they have never seen surpassed in vigour and beauty for their age, and the ground for them was never either trenched or dug. The poor hill lands that are now recognised as worth planting seldom need draining, as they are often uplands and naturally well drained. One of the pleas for planting such is that the planting arrests denudation and conserves the moisture and fertility of the soil. And even where soil is too wet much can be done to drain it by a good choice of kinds. The Poplar, Willow, and Spruce, if planted thickly enough, will prove very good and cheap drainers.

There are cases, owing to a deadly uniformity of surface, where some draining may be needed, but for forest work generally it is needless—beyond what is needed to keep the rides dry. Even in heavy soils I avoid draining. Light sandy soils, and hill soils generally, seldom or never need draining, except when they lie upon a hard pan, such as is here and there found in peaty districts, and where the water stands, however light the rainfall may be. Where the surface soil in such cases is not very deep, and an outfall can be found—not an easy matter on level tracts—the surface water can be led off by open drains, but when the peat is deep the water will not subside below the drain levels. Some of the best German foresters hold that in many soils the best system is that of trees of different ages, different kinds, and different times of cutting, grouping the trees according to soil and situation, and this way helps one to avoid the heavy costs of draining and trenching. It is a better way than the dead level mixture we so often see, and which has to adapt itself to all conditions. This grouping and massing way also leads to beauty, as by its means we keep and accentuate any varied incidents of the surface. Putting the Willows and

spiry-leaved trees in wet and hollow places. This system of planting is one means of obviating draining to some extent, and by planting the different spots with Austrian Larch, Scotch Fir, and Beech on the drier ground, Spruce, Sitka, and Douglas Fir in the sheltered and moist hollows, Oak, Ash, Sycamore, and Elm on the cool ground, and Poplar, Willow, Alder, and Birch wherever the soil is wet. This is a better plan than the mixing of kinds together on the same spot, no two of which are alike in their wants.

Trenching does not add to the staple of poor soils such as are generally planted with forest trees, useful though it may be in rich garden ground, where a rank quick growth is sought. Even if we can face the great cost of trenching the labour is not always to be had. I have seen a countryside denuded of labourers in order to trench ground for planting, and the result is no better than if a plough had been run through the land, or even if the trees had been planted in the sod. One of the best things about a wood is that it finds its own soil, and if we plant closely and well, and choose the right trees, it very soon begins to do this as many of the finest natural woods have done it for ages. Woods planted a dozen years will be found to have a good deposit of leaf-soil—this is in cases where the tree suits the ground and where the young trees are thick enough to discourage the grass, to their own benefit. In our open, loose way of planting we may look in vain for any such deposit, as the grass absorbs it all. The effect of the heavy fall of leaf-soil from the lower

branches of Pines and other trees is that, in hot and dry seasons, when farmers and gardeners are at their wits end to get water, the wood is cool and safe.

* * *

HEDGES AND SHELTERS OF HOLLY.—Our country is fortunate in having as a wild tree the most beautiful evergreen of western Europe, and one denied to much of the country in central and northern Europe and a vast region in North America, where it will not withstand the winters. In beauty other evergreen Hollies are inferior to it, hence its berried branches are sent in quantities to North America at Christmas. In too many places in our country there is the unfortunate use of the iron fence, which has neither beauty nor endurance and is useless for shelter. A well-made live fence will last three times the life of an iron one; and of all possible living evergreen fences the best is Holly in close but not stiffly clipped lines. Better still is the free unclipped Holly hedge, as it makes a fine shelter as well as a good background, of which there is a fine example above the kitchen garden at Batsford Park. In Warwickshire and other counties we have often seen it making as good a shelter round fields as any shed. Of the clipped Holly hedges fine examples are at Woolverstone in Suffolk. Where land is not valuable—either from its poverty or elevation or other reasons—it matters little whether the hedge is clipped or not, especially round woodland and for cutting off woods from pasture fields. For such a case the finest hedge is that of unclipped Holly, because then we get its

fruit and protection and fine form. Such hedges might be either of Holly alone or mixed with Sloe or Quick. Where from the nature of the soil it is not easy to raise Hollies from seed—as they should have friable open ground in the young state—it is best to buy small plants from the forest nurseries. The worst enemy of the Holly hedge is the rabbit. I have lost thousands of plants in that way, and although many places are not so much infested, still great care must be taken, or in hard winters the Hollies are sure to be destroyed, especially if newly planted. Where Holly comes naturally, as it does in many parts of the country, the destruction is not noticeable except after hard winters, when I have seen even old woods of it destroyed. Being a close-growing shrub it forms a shelter for cattle, and as it grows much better than the Hawthorn under hedgerow trees it ought to be more often adopted for enclosing meadows and pastures. It keeps itself almost free from weeds, owing to the closeness of its branches at the bottom, and it is free from insects. Holly is found flourishing on dry gravelly land as well as on strong clay, but sand and sandy loam are the soils it delights in most. On flat ground the site intended for the Holly hedge should be trenched and manured before the time of planting, but the chief thing is to have the soil open and fertile and nothing can be better as an addition than well-rotted farmyard manure; the same should be used for mulching after planting, but any mulch is better than none, even grass, or weeds, or litter. The ordinary

raised bank made for fences in many districts of the south is preparation enough. The distance between the plants should be at least a foot, and, if they are very bushy, 15 inches apart will be close enough. In order that they may stand firm and upright they should be trod gently immediately after the roots are covered. For the first two seasons the hedge will require no pruning, but after the third year such parts of the sides as become broad and irregular had better be clipped uniformly. I say clipped, meaning by the hedge shears, for the Holly is too thick and its leaves too numerous to allow of its being trimmed with a hedge-bill. The clipped Holly hedges should be perfectly straight, broad at bottom, and gradually taper to the top. The time for clipping is in October, and it is not necessary that it should be done more than once a year. In many cases this clipping may be necessary, but by far the finest hedge is the naturally-grown, unclipped one.

A LAWN GARDEN.—If fate plants us on one of those natural lawns that border our rivers why not accept the gift instead of cutting up the space into some semblance of a “style”? If asked to choose among all the kinds of garden I should prefer an open lawn flowing down to a river with good river-borne soil. We have no trouble in arranging or planting such ground, far easier in these ways than diversified ground. To be able to stand at ease and work on the sloping hill was only one of the reasons for the terraced ground; another important one was to gather the often sparse soil of the hill-slope and to keep it. In our river lawns we have all this done for us in the noblest way, and simple lawns may be at once the most refreshing and beautiful of all gardens: and around them we may have free place for everything from Cedars to Roses without needlessly limiting the breadth and airiness of the lawn.

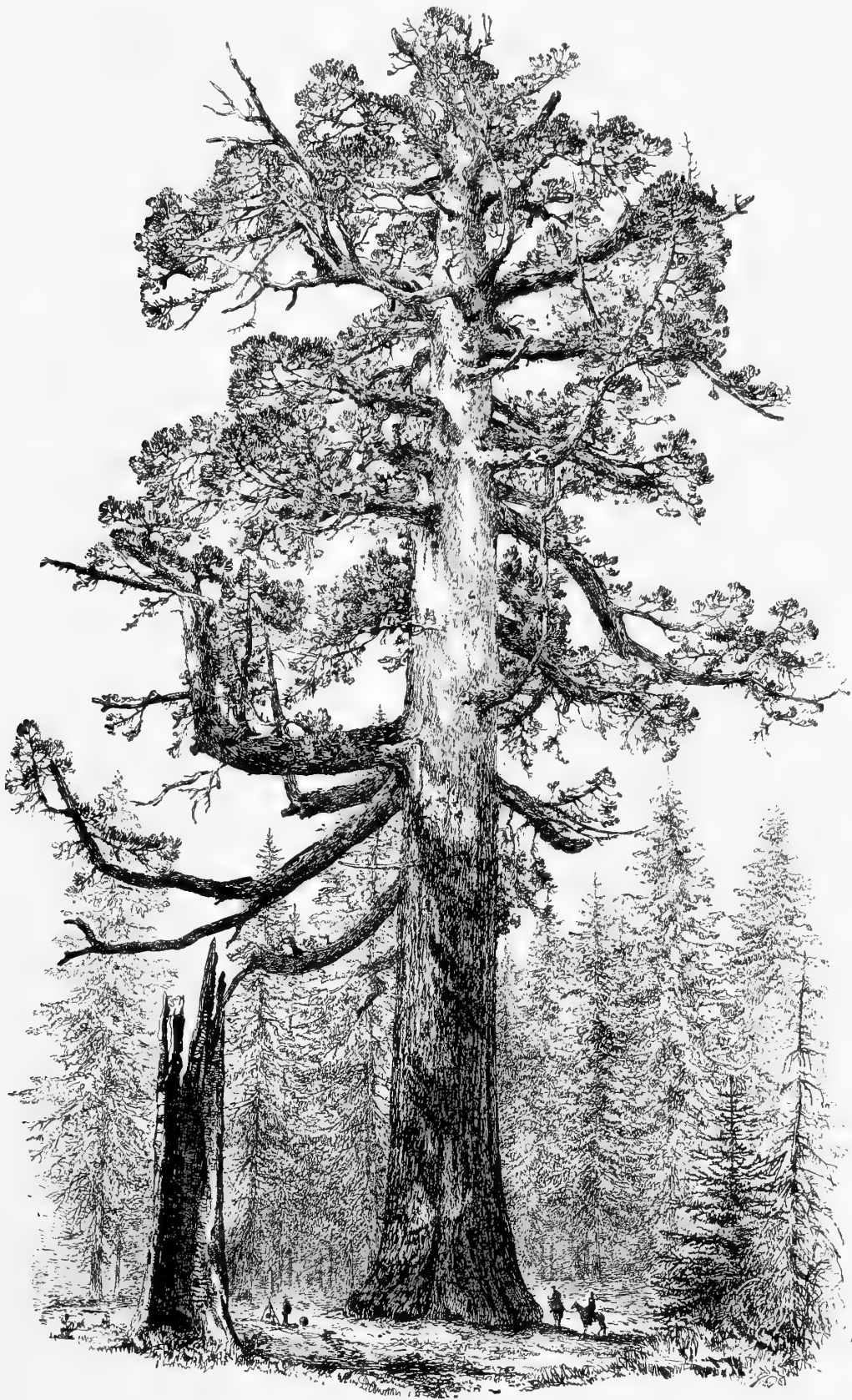
THE GREATER TREES OF THE
NORTHERN FOREST.—No. 13.
THE BIG TREE (*Sequoia gigantea*).

At first I intended to omit this tree from among the greater trees of the Northern Forest, because of its failure in our own pleasure grounds. On second thoughts I asked if this was not largely our own fault in placing the tree wrongly. It has, at least, as good a right to be included among the trees for our southern and western country in England and Ireland as the Monterey Pine (*P. insignis*). Hitherto we have treated it as a pleasure-ground tree, usually alone and exposed to every stress of wind and climate, with the grass about it drinking all the moisture that falls in dry seasons. It is so ugly in these conditions as to be a laughing-stock, the planter adding to the misery in supposing that when in health the tree should be dressed down to the ground with branches, but that is only the infant stage of the tree, and it is quite a mistake to encourage it further.

The best thing to do with the tree would be to give it a fair trial as a forest tree in sheltered valleys or gorges, and where there are none of these to plant in a close wood and always among trees and cover of some kind which would help to make a soil and keep the sun out and the ground cool. I have seen it tried in many ways, but never in these. Coming from one of the finest climates, with a constant sun and gentle Western Pacific breezes, the very least we can do with it in our country is to take care to place it in the best

woodland conditions. I have myself cut down many of these trees, vexed by their shape and position, which I should now be very happy to have alive and grouped in a steep woodland dell running south, and with hill and wood protecting perfectly from the north. There are many country places where like conditions exist, and now given to the commonest trees. If such places were a little away from the house it would matter little—the trees might often be the reason for a woodland walk. We should in such ways give them all the chance of growth our climate affords, and get rid of the toy-tray look of our garden lawns which arises from sticking such trees about in them. The fact that over much of the northern and midland country we may not hope for success with them should be another reason for growing the tree where the conditions are most favourable. The objection to its ugly shape is entirely our doing. In its native country it is most picturesque in form.

In a diary of his journey through the mountain country of California, kindly extracted for me by Sir Chas. Wolseley, occur these lines as to the natural form of the mature tree: "The grove being reached after passing through miles of forest of gigantic Pines and Firs, and the Big Trees themselves standing amongst others of over 200 feet in height, they do not at first strike one for their gigantic proportions. What struck me most was the entire absence of that symmetrical growth one is accustomed to see in the tree in England, these wild trees having more the irregularity and rugged growth of the old Scotch Fir."



ONE OF THE TREES IN CALAVERAS GROVE. 280 FEET HIGH AND 93 IN GIRTH.

For so famous a tree the name
 "Big Tree" is the best English one,

English Name. by reason of its fitness
 and its established use
 among the people who
 know the tree best, and therefore we
 adhere to it.

No tree has been so often described,
 and the best account we have read of
 its effect and beauty—

Beauty. which concern us most
 —is that of John Muir

in "The Mountains of California." He
 says: "These giants bulge consider-
 ably at the base, but not more than is
 required for beauty and safety; the only
 reason why this bulging seems in some
 cases excessive is that only a small sec-
 tion of the shaft is seen at once. One
 that I measured in the Kings River
 Forest was 25 feet in diameter at the
 ground, and 10 feet in diameter 200 feet
 above the ground, showing that the
 taper of the trunk as a whole is charm-
 ingly fine. About 100 feet or more of
 the trunk is usually branchless, but its
 massive simplicity is relieved by the bark
 furrows, which, instead of making an
 irregular network, run evenly parallel,
 like the flutings of an architectural
 column, and to some extent by tufts of
 slender spray that wave lightly in the
 wind and cast flecks of shade, seeming
 to have been pinned on here and there
 for the sake of beauty only. The young
 trees have slender, simple branches
 down to the ground, put on with strict
 regularity, sharply aspiring at the top,
 horizontal about half-way down, and
 drooping in handsome curves at the
 base. By the time the sapling is 500 or

600 years old this spiry, feathery, juve-
 nile habit merges into the firm, rounded,
 dome form of middle age, which in turn
 takes on the eccentric picturesqueness
 of old age. The foliage of the saplings
 is dark bluish-green in colour, while
 the older trees ripen to a warm brown-
 ish yellow. The bark is rich cinnamon-
 brown, purplish in young trees and in
 the shady portions of the old, while the
 ground is covered with brown leaves and
 burrs, forming colour masses of extra-
 ordinary richness not to mention the
 flowers and underbrush that rejoice
 about them in their seasons. Walk the Se-
 quoia woods at any time of year and you
 will say that they are the most beautiful
 and majestic on earth. Beautiful and im-
 pressive contrasts meet you everywhere;
 the colours of tree and flower, rock and
 sky, light and shade, strength and frailty,
 endurance and evanescence, tangles of
 supple Hazel trees, tree pillars about as
 rigid as granite domes, Roses and Vio-
 lets, the smallest of their kind, bloom-
 ing around the feet of the giants, and
 rugs of the lowly Chamæbatia where the
 sunbeams fall."

"I never saw a Big Tree that had
 died a natural death; barring accidents,
 they seem to be immortal,

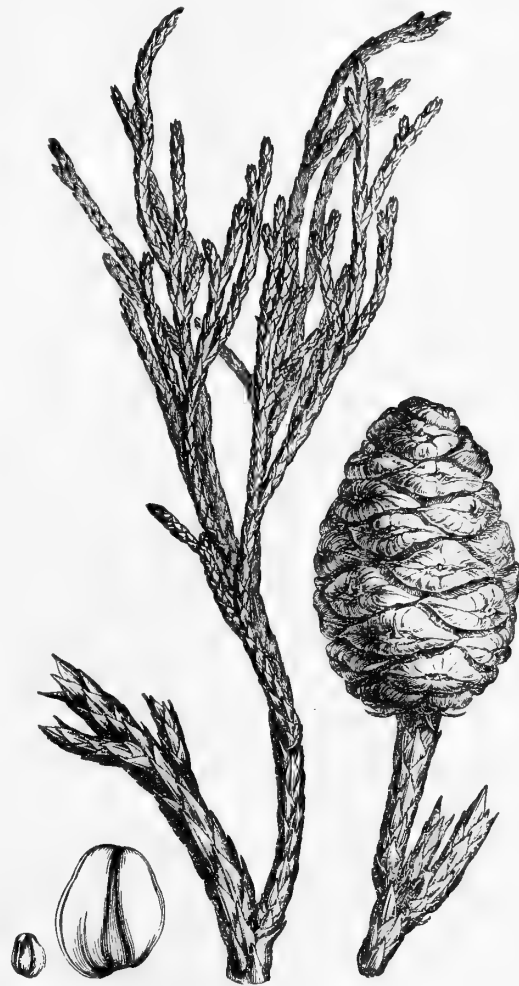
Age. being exempt from
 all the diseases that af-
 flict and kill other trees. Unless de-
 stroyed by man they live on indefinitely
 until burned, smashed by lightning, or
 cast down by storms, or by the giving
 way of the ground on which they stand.
 The age of one that was felled in the
 Calaveras Grove, for the sake of having
 its stump for a dancing floor, was about

1,300 years, and its diameter, measured across the stump, 24 feet inside the bark. Another that was cut down in the Kings River Forest was about the same size, but nearly a thousand years older (2,200 years), though not a very old-looking tree. It was felled to procure a section for exhibition, and thus an opportunity was given to count its annual rings of growth. The colossal scarred monument in the Kings River Forest mentioned above is burned half through, and I spent a day in making an estimate of its age, clearing away the charred surface with an axe and carefully counting the annual rings with the aid of a pocket-lens. The wood rings in the section I laid bare was so involved and contorted in some places that I was not able to determine its age exactly, but I counted over 4,000 rings." These estimates are confirmed by the most recent investigations on the age of the Big Tree.

It may be said that the north groves of Big Trees show little or no sign of extending their very limited

Reproduction. ed range, hardly, even, of holding their place except under the most favourable conditions. Mr. Sudworth, dendrologist of the Division of Forestry, makes the following statement about the Calaveras Grove and Stanislaus Grove of Big Trees, which, it is important to notice, have been protected from both fire and grazing for many years: "Unlike the other species of its kind—the Coast Redwood—the Big Tree reproduces itself so slowly and with such uncertainty as to be practically at a standstill in these groves. A few seedlings took root

in 1853–1855 in the Calaveras Grove, and are now 2 or 3 feet in diameter. There is no other evidence of increase in this grove, although the large trees are in a thriving state. The forest is not well watered, and the humus is too dry to encourage the reproduction of the species. Pines, Firs, and Cedars appear better able to propagate themselves on



the same ground. On the borders of the grove the soil is so constantly dry and exposed to the trampling of grazing herds as to allow no reproduction outside of the forest. Moreover, the small, heavy seeds are not carried far by the winds, as in the case of the Pines, Firs, and Cedars. But if the reproduction of the Big Tree were the best conceivable,

it would take several thousand years to replace the present groves were they once destroyed. The Stanislaus Grove is sparingly watered in parts by small perennial spring streams, and as a result shows a few small patches of seedlings. The constant moisture in the vicinity of these streams enables the seed to germinate, but only where big logs and other heavy *débris* exclude cattle and sheep. To cut this tract would certainly soon affect the drying up of the small water supply, as it has already done elsewhere. The preservation of the race of Big Trees in this locality is unquestionably dependent on maintaining the present groves intact. One region there is, however, where the Big Trees are reproducing themselves. This is on the South Fork of the Kaweah River, and particularly on both branches of the Tule River, where there are young trees in abundance and of almost every age."

Those seeking more copious information about the Big Tree may find it in "Bulletin No. 28" of the United States Department of Agriculture; an excellent account is also given in C. S. Sargent's "Silva of North America."

The wood is light, soft, and coarse, and is much used locally for fencing and shingling.

* * *

THE NEW WITCH-HAZEL.—Messrs. Veitch have kindly pointed out a slight error in our recent article upon the Witch Hazels. It would appear that the new kind, *Hamamelis mollis*, was not introduced through Dr. Henry, but found its way into Messrs. Veitch's collection with other Chinese plants, and was first recognised as a new species by Mr. G. Nicholson when visiting Coombe Wood.

SPRING-FLOWERING CROCI.*

DEAN HERBERT, about fifty years ago, commenced his history of the species of *Crocus* by lamenting that only five species were at that date generally grown in Holland and sold in England, namely, *sativus*, *vernus*, *versicolor*, *aureus*, and *biflorus*. We cannot say we have advanced much up to the present time, for *sativus* is now but little seen in English gardens, and of the five additional species he mentions as found sparingly in certain nursery gardens, only one, *speciosus*, can be regarded as even fairly well known; and three, *serotinus*, *aureus* var. *lacteus*, and *candidus*, are still very rare plants.

The commonest *Crocus* is the old *Dutch Yellow*, a form of *C. aureus*, and it thoroughly deserves its popularity, for in most English gardens it is the first plant of the year to produce colour in the open, and such a glow of colour, too. For, as Forbes Watson has so well said, "Vividness of colour is the most important point in the expression of the Yellow *Crocus*." It is always one of the pleasantest days of the year when the sun shines clearly and the atmosphere is dry and warm enough for the Yellow *Crocus* to open, and the bees can once more deserve good Dr. Watts's eulogium by finding something to be busy over—pollen in plenty there is to gather, even if honey be but scant. In some favoured localities the impish sparrows have not yet acquired the evil habit of pulling *Crocus* blooms to bits for breakfast, and there they can be enjoyed in their full beauty without the cat's-cradle of black

* With coloured plate of a *Crocus* group drawn by H. G. Moon at Warley Place,

1. *Chionodoxa* 2. *Chionodoxa* 3. *Chionodoxa* 4. *Chionodoxa* 5. *Chionodoxa*



thread that I must perforce weave over and around every patch in this garden, if I would have one blossom left perfect. The Dutch Crocus is a plant for everybody, and can scarcely be too freely planted in borders, under deciduous shrubs, and especially in grass that need not be mown before May; even a town window-box should not be without it. But when it is freely planted in a garden, with good varieties of *C. vernus* such as *Mont Blanc*, *Madame Mina*, and *purpureus grandiflorus* added, there will yet be in the smallest garden room for a few at least of the other sixty-eight described species and their numerous varieties.

To pass over, for the present, the autumnal Croci, why wait until mid-February at least when,

Early Kinds. by selecting a well-drained and sunny corner,

we may in the early days of January enjoy the blooms of *C. Imperati*, with their strange chameleonic change from pale yellow buds to bright lilac open blossoms? For many years I have never failed to find a few flowers of *C. chrysanthus* on New Year's Day, and *C. Sieberi* is seldom more than a week later here; and there are others that, with a little overhead protection against rain such as a handlight will afford, will in a fairly open winter keep up a constant succession from the time that the later autumnal species are overwhelmed by bad weather in the open borders.

A Long Succession.

It is, in fact, impossible to say which is the first spring Crocus, for now we have in cultivation various forms that with a little care and attention

should give a blossoming season from the end of August until April. The beautiful though small orange species, *C. vitellinus*, used to be the connecting link between the last *lævigatus* and *hyemalis* and the first *C. Imperati*, and the question could be raised as to whether it is the last autumnal or the first vernal kind; but the recently introduced *C. caspius* has so far fulfilled its reputation of blossoming from autumn until spring, that here, in a cold frame, it has been constantly in flower from October till mid-February and still shows unopened buds.

My hope in penning these lines is to induce others to grow and derive enjoyment from some of the less known, but certainly more refined forms of this lovely genus. I fear that those represented in the accompanying plate, drawn in Miss Willmott's garden at Warley, will for many a day remain too scarce to be found in many gardens; but in most catalogues may be found forms of *C. Imperati*, *chrysanthus*, *tomasinianus*, *Sieberi*, and *biflorus*, at quite reasonable prices, and all these are of the greatest value as being early flowering and easy to grow.

Although—so great is the effect of a very slight change of environment—it is often useless to tell

Culture. even your nearest neighbour your plan for grow-

ing a plant, yet some broad rules for culture may be useful. I find here that most Croci enjoy rooting down into a somewhat retentive loamy soil but prefer to have that which immediately surrounds their corms of a gritty nature,

and I like, when planting, to put in a layer of coarse silver sand to lay the corms on and to nearly cover them with the same; moreover, when lifting them in the resting season the stratum of white sand is of great assistance in the finding of the smaller corms.

With the exception of *C. Fleischeri* all those represented in the plate belong to the section *Annulati* of Maw's arrangement, in which the basal corm-tunic is formed of rings of a more or less coriaceous membrane.

1. *Crocus Tauri melanthorus* (Baker).—A plant introduced some ten years since from Smyrna. I have never yet seen a living plant of the typical *C. Tauri*, and much doubt its being in cultivation, the plant that generally passes for it being a form of *C. reticulatus* that can instantly be distinguished from it at any season by its strongly reticulated corm-tunic; I find also that this plant differs in many characters from Maw's description of the true *C. Tauri*. Thus:—

<i>C. Tauri.</i>	<i>Var. melanthorus.</i>
Tunic.	
Membranous.	Strongly coriaceous.
Perianth segments.	
Pale unstriped purple.	Rich lilac. Exterior of outer segments broadly grained with purple.
Anthers.	
Orange; twice the length of the filament.	Black; peculiarly hastate, about half the length of the filament.
Pistil.	
Very short, pale yellow, shorter than the anthers.	Deep orange; longer than the anthers.

The flower is one of the most globose I have ever seen among Croci, and somewhat suggests a blue *C. chrysanthus* but is not the var. *cærulescens* of Maw, which he describes as being white inside. With our present limited knowledge of the plant it is better to wait before deciding where to place it botanically, but it seems to be akin to *C. biflorus*, *Crewei*, and *chrysanthus*, rather than to *C. Tauri* as known to Maw.

2. *C. Fleischeri* (Gay).—A fine form of this delicate species collected by Mr. Elwes. It differs from the type in that the purple colouring rises but little above the throat instead of continuing in featherings to the top of the outer segments; it closely resembles a form grown at Kew as var. *albus* from Mersina, but is larger in all its parts. The typical form appears very difficult to grow, and even in a cold frame suffers from damp; but this form of it has so far increased and flowered well with me in the rock-garden without protection.

3. *C. cyprius* (Boissier and Kotschy).—A small plant found by Theodor Kotschy on the Cyprian Olympus. Maw's figure (Pl. LVII.), from dried specimens, does not do it justice, missing the depth of the rich purple at the base of the segments and the fiery orange of the throat. It can easily be known from all other described species by the scarlet filament. I find it rather delicate and slow of increase, and have never yet obtained seed, but I understand that at Warley it has seeded freely.

4. *C. chrysanthus*, var. *pallidus*.—This is probably the form mentioned by Maw as occurring on Mt. Olympus,

and it is a pity that such a robust and beautiful plant is so great a rarity. The flowers are larger than in the type and of a peculiarly soft shade of yellow, quite unique among Croci. The barbs of the anthers end in black points—a very characteristic feature of most forms of *chrysanthus*, but not universal, as some seedling forms are entirely without it, and the varieties *fusco-tinctus* and *fusco-lineatus* have the central portion of the anther dark grey instead.

5. *C. biflorus*, var. *Alexandri* (Velen).—This is a most beautiful addition to our gardens, for which we are indebted to Herr Max Leichtlin (1899). It is stated to have been first collected by Skopil at Dragalera in 1892, but in Mr. Maw's herbarium, now at South Kensington, there is a specimen from Berlin under the name of *C. annulatus purpurascens*, which is Herbert's variety (4) of *annulatus*, and described by him as having "a full-sized flower with the sepals more or less purple on the outside; in some richly coloured." It grows in Dalmatia with the white variety (5) *albus*, otherwise var. *Weldeni*.

I think Herbert's name ought to stand for this plant. I have raised seedlings from var. *Weldeni*, giving every degree from pure white through faint lilac speckling to deep purple suffusion of the exterior of the outer segments, exactly the range of colouring in this var. *Alexandri*, but at present the seedlings have given only small blossoms, though I think they will gain in size.

E. AUGUSTUS BOWLES.

THE RED-BUD OR JUDAS-TREE (*Cercis siliquastrum*) AND ITS KIN- DRED.

It sometimes happens that to be brought for the first time face to face with a tree of striking beauty, rightly used, is to feel for ever after a liking for what has once given such sense of pleasure: this has been my lot with the Judas-tree. To see it now, no matter where, is to recall the day when—having come straight from the north of England where it is rarely seen—I first saw the tree upon a sunny



FLOWERING SPRAY OF JUDAS-TREE.

hillside in Italy, about half-way up the slope and filling the courtyard of one of those little *auberges* so common beside the main highways. Its beauty shone out as a landmark in all the country side, a group of trees being planted in one of those square walled courts so characteristic of the south—a court raised many feet above the road, with a rough table and one or two benches, and commanding a wide prospect and a long stretch of winding mule-track. Six or seven stems had been planted in a cluster, spreading

at various angles and several of them leaning upon the stone coping with their branches trailing far over the wall and towards the ground, but their heads united in one spread of beauty, hiding all except the upper windows of the house. The planting was probably one of chance, for a southern innkeeper rarely plants for effect. But, whether by inspiration or by chance, the glory of that little courtyard with its group of Judas-trees in full bloom was pleasant to see, and in the summertime the large rounded leaves spread a cool canopy, beneath which the wayfarer might rest.

The Judas-tree is rather slow in growth, a little difficult of increase, and is best transplanted young. Throughout the south of Europe it is common but increases in size and numbers as one travels east, till at Constantinople its beauty during the late spring is remarkable, the trees bursting with flower-clusters from the topmost branch even to the ground level in one blaze of colour. From Palestine it reaches away into Asia as far as Persia and Afghanistan and is valued everywhere alike for its beauty, for its flowers—which are eaten as a salad and preserved as pickle for their pleasant taste, and for its shoots, which are used for making baskets and light wicker-work. Though hard, enduring, capable of a fine polish, and finely streaked with black, green, and yellow markings, its wood is too variable to be much valued, though used at times for small curios.

The Judas-tree has long been known in England, having first reached this

country in 1596, and here and there in old gardens very old trees may be found.

*In British
Gardens.*

One such tree was growing in Bath some few years since and said to be 300 years old at least, with a girth of 6 feet half-way up the stem; other fine ones are at Richmond, at Dulwich, in the Isle of Wight, Syon, and many other places in the south. In northern gardens it is tender and rarely seen except upon walls and sheltered house-fronts, and trees are grown in Scotland in this way. It does best in rich, open loam with a well-drained bottom, a warm aspect, and some shelter; it branches freely when young, but with age forms a rounded spreading head and bent like an old orchard tree, with shoots and branches of a deep purplish-black. It never grows tall, fine trees, with a circumference of nearly 100 feet, not rising much above 20 in height when fully exposed, though in warmer countries it often grows higher. The flowers appear in May and June, before the leaves, and are carried in dense clusters bursting directly upon very short stalks from the stems and main branches and sometimes from the trunk itself, until the whole tree is outlined in brilliant rosy-purple flowers, which draw the bees from far and near. Though slow-growing, it begins to flower when small and a group of such trees is soon conspicuous for its beauty at quite a distance, forming in time a natural arbour little less handsome for its foliage in summer than when in bloom. The leaves are of a distinct bluish-green in colour, the sunlight striking through them with a peculiar translucent effect;

indeed, whether in flower or leaf it can be mistaken for no other tree. In some seasons it flowers partially a second time in the autumn, but the seed-pods are then its best ornament. Though seeds rarely ripen, the long pods shaded with reddish-purple are very handsome, especially when seen in a strong light, and they hang upon the branches after the leaves have fallen and often through a great part of the winter. There is but slight variation in the colour of the flowers, but a less beautiful white form is grown, and a worthless variegated variety is also in existence. It is a tree that grows well in the neighbourhood of towns, needing little care and space, and content with any save cold, compact and wet soils, and, when once well started, will hold its own in dry spots and even partially-shaded corners.

With such beauty of form and flower it seems strange that so little use is made of this tree in English gar-

dens, spite of its picturesque outline, its endurance, and its hardiness. Though the tree is common in Palestine there is nothing more than an old legend, perpetuated in antique engravings, which connects it with Judas, and with probably the same exactness as has fixed upon a dozen different spiny plants for the crown of thorns; nor has the Judas-tree an undivided claim, for other guesses equally groundless have fixed upon the Elder. The southerner does not allow such trifles to mar the enjoyment of his

favourite salad nor need anyone forego the beauty of the tree for the sake of a name which is easily changed to *Red-bud*, its American equivalent.

There are five or six other kinds of *Cercis*, two of them from China (one of which reaches a large size), a dwarf shrubby form from Afghanistan, and three others from different parts of North America. The best known of these, the American Red-bud (*C. canadensis*), though less fine in colour, is

Other Kinds.



THE JUDAS-TREE: LEAF, FLOWER, AND SEED.

hardier than the Judas-tree and to be preferred in northern gardens. The large Chinese kind is rich in colour and the flowers larger, but from difficult increase it is rare in Europe though much planted in Japan and a favourite tree in temple gardens. Of the garden value of the new kinds it is as yet too early to speak.

THE CALIFORNIAN RED-BUD (*Cercis Californica*).—Known only as a low straggling shrub, common in thickets of the Californian Pacific coast, and only remarkable in the distinct shape of its leaves.

THE AMERICAN RED-BUD (*C. canadensis*).—Despite its name this is not a Canadian tree, but found in the central and southern United States, though hardly much further north and the hardiest kind in English gardens. Though its flowers are smaller and not so showy as in the European kind, mature trees are of great beauty, and where abundant, as in the rich bottom-lands of the sheltered southern valleys, their profusion of pink flowers in April and May lights up the whole country. Its common form is that of a low tree, rarely more than 20 feet high, but spreading far in an irregular rounded head, and decreasing in size as one travels north; the finest wild trees are found in the woods of eastern Texas and Indian Territory, where they reach a greater height than any-



THE AMERICAN RED-BUD: FLOWER AND LEAF.

where else, flowering at the same time as the Dogwood, and very beautiful in their combined effect. It is profuse in flower, the clusters upon old branches coming often inches across, and, as in Europe, the buds are eaten as a salad by the French Canadians; the flowers are followed in autumn by seed-pods of a rich reddish-brown. The leaves are more pointed than those of the common Judas-tree, hairy beneath in the axils of the large veins, and turning to a fine scarlet when fading in the autumn. In British gardens it is an uncommon tree, but well worthy of trial where the Judas-tree is tender, and it flowers a little earlier. A double-flowered variety is grown in American gardens, and there is also a hairy or pubescent form.

THE CHINESE RED-BUD (*C. chinensis*).—The

tallest of the group, reaching 50 to 60 feet in the southern provinces of China, with a girth of 12 feet. It is commoner in American gardens than in our country, forming a small tree of compact rounded outline, flowering freely and ripening its seeds in many parts. It is better in habit than the American tree, rather slow in growth, but starting to bloom while young, and for its neatness and beauty of flower is valued for small gardens. Its flowers, coming in May, are of deep rich rose, very numerous, and larger than in other kinds, as are also the leaves, of deep rich green and rounded form, tapering abruptly, and, though variable in shape and size, often 5 or 6 inches long and wide; they are thickly carried, and being hard, shining, and leathery, they resist drought, and are almost free from insect pests. Though hardy, it is a rare tree in Europe, being difficult of increase save from seed—a slow process. The tree is also known as *C. japonica*, and is common in Japan, but it is believed to have come originally from China.

GRIFFITH'S RED-BUD (*C. Griffithi*).—A new and little-known kind, found growing in the mountains of Afghanistan at a height of more than 10,000 feet, as a prostrate trailing shrub with smooth, rounded leaves. Coming from such a home it will doubtless prove hardy if its flowers are of sufficient beauty to make it of value.

THE HAIRY CHINESE RED-BUD (*C. racemosa*).—A new and beautiful kind recently discovered in the Szechwan province of southern China as a low shapely tree of 20 or more feet, with rounded leaves varying in length and breadth, and covered upon their stems and under-surface as well as upon the young shoots with a coating of soft down.

THE TEXAN RED-BUD (*C. texensis*).—A form common in the valley of the Rio Grande as a large shrub, covered in spring with rosy-pink flowers, but probably too tender for British gardens.

SPECIES AND THEIR NATIVE COUNTRIES.—*Cercis Siliquastrum* of Linnæus, south-eastern Europe, Asia Minor, and Persia, to the frontiers of India; *californica* (*occidentalis* of Torrey), Californian coast region; *canadensis*, central and northern United States; *chinensis* (*japonica* of Siebold), China; *Griffithi*, Afghanistan; *racemosa*, southern China; *texensis*, western United States.

B.

THE PITCHER PLANTS.

(Continued from page 71.)

N. Findlayana.—A scarce hybrid of uncertain origin and probably not grown in England; its medium-sized pale green pitchers are deeply mottled with reddish crimson.

N. formosa.—A hybrid between *chelsoni* and *distillatoria*, of small value in collections.

N. gracilis major.—A widely-spread shrub throughout the East Indies, of climbing habit and bearing narrow leaves and small greenish pitchers from 2 inches in length. A plant of easy culture but in greenhouses more curious than showy.

N. Harryana.—The only known natural hybrid among Pitcher Plants, discovered by Burbidge in the mist zone of the Bornean mountains at a height of 8,000 feet. It is exactly intermediate between its two parents *Edwardsiana* and *villosa*, and exists as a climbing shrub living mostly in low trees round which its long stems are wreathed. Only known as a dried specimen in Europe.

N. Henryana.—A cross between *Hookeriana* and *Sedeni*, rarely met with in collections. Its pitchers of about 7 inches are much swollen towards the base, and reddish-purple streaked with green most deeply coloured in the upper part. The throat is pale green with purple spots and the mouth crimson shaded with violet, rising to a rounded rim of deep rose.

N. Hibberdii.—A garden seedling of minor importance. Its blood-red urns are marked with yellowish-green on the outside and pale green within, whereas the lid is green without and dull red on the inside.

N. hirsuta-glabrescena.—A Bornean species bearing small or medium-sized green pitchers slightly enlarged at the base, with heavily fringed wings; mouth ovate, with a fine-ribbed yellowish rim, and the lid armed with a short spur. *Rubra*, a distinct form of this plant, carries larger pitchers suffused with red.

N. Hookeriana.—A very fine plant akin to *Rafflesiana* but of stiffer habit and shorter stalks, bearing darker more rounded pitchers with a shorter hinge, and a lid nearly flat. Leaves and pitchers are tough and leathery, lasting longer in beauty than those of any other kind; urns produced more than eight months ago upon plants at Chelsea being still in perfect condition. They are spotted red and are nearly

round, with a flat closely-ribbed rim and very broad wings sharply fringed. A noble plant of free growth. A variety with deeper pitchers is known as *elongata*.

N. hybrida.—A garden cross carrying large dark green pitchers of 8 inches, with fringed wings. A handsome variety more grown than the type is *maculata*, a plant in which the pitchers reach 10 inches and are heavily streaked with reddish-purple.

N. intermedia.—Another seedling of uncertain origin, coming from *Rafflesiana* and an unknown parent. Its urns, carried upon leathery leaves, are also tough, of medium size, and flask-shaped, tapering at the base, and slightly swollen in the middle; colour green with reddish-brown spots. Wings broad and prominent; lid a little hooded. A fine plant of free growth and easy culture.

N. Jardinei.—One of the Australian species not grown in this country. A low, stout shrub of 2 to 3 feet, hairy in its early stages. Long tubular pitchers of 7 inches, widening at the base, with prominent veins and narrow smooth wings of dull red. Cape York, Queensland.

N. Kennedyana.—Another shrub of the Australian group, introduced in 1882, but now unknown in gardens. Its stems are long and climbing, with pointed stem-clasping leaves. Long narrow pitchers suffused red, a little enlarged at the middle and thence tapering; narrow unfringed wings or ribs, and a narrow rim; throat of greyish violet, lid but slightly raised, and the stem showing a peculiar knot or curl in the middle. A distinct plant of difficult culture.

N. Khasiana.—A plant growing in the Khasian Hills, Nepal, at a height of 3,000 feet. It is a shrub with long shining leaves reaching nearly 18 inches, carrying medium-sized pitchers of a strangely angular shape behind, when young. A kind of free growth, reaching 6 feet, and often confused with *N. distillatoria*.

N. lanata.—A rare species from Borneo, much confused with *Veitchii* among growers. It bears large leaves of 12 inches or more, smooth and dark green above, paler, and covered with sparse blackish hairs beneath. The long narrow pitchers are greenish, with wings fringed and toothed, and an angular neck. A delicate plant, very sensitive to strong light, and perhaps not now in cultivation.

N. Lawrenceana.—A distinct cross between *Phyllamphora* and *Hookeriana*, of very dwarf growth and leaves slightly toothed. Its pitchers are rather small, of pale green heavily marked with deep crimson.

N. Lowii.—The most singular of the entire group, found at a height of several thousand feet in the mountains of Borneo. Its long stems twine round low moss-covered trees, bearing bright green leathery pitchers which are narrowed sharply in the centre and so twisted at right angles as to make them quite unlike other species. The lower half is completely darkened, while the upper broadens to a wide rimless mouth of a glossy brown colour shading to mahogany-red on the inside, and covered with a large hooded lid. The inner glands of the pitcher are more marked than in any other kind. Up till now it has been impossible to obtain living plants, owing to their strange conditions of life.

N. madagascariensis.—The earliest known of Pitcher Plants, found by Comerson, the first European to explore Madagascar, but only introduced by Veitch in 1879. Its small pitchers are finely formed, flask-shaped, thinly hairy, winged, and bright crimson in colour. The lid is peculiar, being contracted in the middle and shading a circular mouth with narrow rim and cream-coloured throat. It is handsome and distinct but delicate under cultivation, and has twice died out.

N. Mastersiana.—One of the best of Pitcher Plants raised as a cross between *Khasiana* and *Sanguinea* by Messrs. Veitch. It combines great beauty with free growth, being one of the easiest to grow and profuse in its pitcher upon quite small plants, while as many as fifty urns are sometimes developed upon one strong one, lasting in beauty for many months. They are large, reaching at times 10 inches, and are roundly tubular in form, enlarged below the middle, above which they are circled by a ridged contraction; colour a rich claret-red on the outside, and rosy-cream spotted with red within, upon the throat. The wings are deeply toothed, and the rounded rim of glossy red is narrow and thickly ribbed. This useful plant succeeds everywhere, and is grown in dark and lightly coloured forms, while *compacta* is a variety of dwarf habit and very profuse.

N. mixta.—A seedling from *Curtisi* and *Northiana*; and a useful kind of free growth and fine colour. Its pitchers reach 9 and 10 inches, and are creamy-yellow marked with green and red, shading to deep crimson about the mouth, which is beautifully ribbed. Also grown in a deeper coloured form known as *sanguinea*, with pitchers of dark reddish-brown with deeper blotches; lip larger, and of shining crimson.

N. Morgania.—One of the best of American seedlings; a cross between *Hookeriana* and *Phyllamphora*. A fine plant of neat habit and free growth, bearing leaves with rosy midribs and flask-shaped narrow-winged pitchers of 6 to 8 inches, finely marked when young in bright red and pale green, but deepening with age to uniform deep red, the pale green of the lid alone remaining unchanged.

N. Northiana.—A fine plant found upon limestone cliffs in Borneo, where it reaches great size and vigour, but rarely thrives under glass. The pitchers are flask-shaped and nearly a foot in length (wild pitchers reach 16 inches), pale green with large irregular blotches of purplish-red, and so tough that the natives make use of them for boiling rice. They bear two ringed wings, but their great feature is the undulating and finely-ribbed rim around the neck, which is closely shaded by a shining lid, finely spotted with black. One of the noblest kinds in the few places where it succeeds.

N. O'Brieniana.—A scarce Bornean kind, with long narrow pitchers, of which the lower part is green and slightly distended, the upper portion tubular and reddish with a green rim.

N. Outramiana.—A pretty and free-growing cross between *Hookeriana* and *Sedeni*, bearing flask-shaped pitchers of 5 inches, broadest below and tapering upwards, with narrow hairy wings. Their colour is pale yellow-green, finely blotched and spotted with deep red extending to the mouth and the interior; the rim is deeply ribbed and lined with bands of green and crimson. Upon some plants the dark spots completely cover the pitcher, which becomes a uniform deep red.

N. Paradisæ.—A garden hybrid bearing pitchers of 4 to 5 inches, much contracted towards the middle, and crimson marked with pale green in colour, with a green rim and reddish lid.

N. Pervillei.—A plant recently introduced from the Seychelles, but not a success in gardens, from which it has already disappeared. As a wild plant it is of robust habit, bearing leaves a foot long and fine crimson pitchers of 8 inches, but under cultivation these are too small to be more than of botanical interest.

N. phyllamphora.—An old plant from Borneo and Cochin China, known to botanists since 1790. It is of free growth and easy culture, bearing pitchers which reach 10 inches upon the wild plant but under glass are much smaller, bright green in colour, and wingless, these being replaced by a few hairs.

N. picturata.—A fine cross obtained by Messrs. Veitch between *Dicksoniana* and *mixta*, and as a new plant is fully described above.

N. Rafflesiana.—An old kind in gardens, first grown in 1815, and perhaps the most easily managed of any. It is a handsome plant, bearing large green leaves in which the midrib is greatly extended (sometimes 3 feet) bearing fine rounded pitchers of 5 to 9 inches, with crested wings and a mouth gradually narrowing to a long raised hinge supporting the lid; their colour is of a pale green, thickly spotted with purple-brown markings. Singapore. A free grower, readily propagated, and profuse in pitchers. It is grown under several forms: *insignis*, with larger pitchers, much dilated at the base, beset with brown hairs, and with a deeply ribbed rim; *pallida*, a variety sparingly spotted; and *nigro-purpurea*, a distinct plant bearing dull pitchers of brownish-purple, varied by a few paler spots and star-like hairs.

N. Rajah.—A noble plant of the Bornean mountains, but rare in gardens and of difficult culture. Growing at a height of 6,000 to 8,000 feet, in a region of perpetual mist, its enormous pitchers of 12 inches or more long by 6 inches broad, and holding three to five pints of liquid, rest upon the wet sandy soil or are half buried in decaying vegetation. These great vessels are stout and leathery, of ruddy purple fading to violet-purple with age, and a rim of rich red-brown; they bear two fringed wings in front, and their whole surface is more or less clothed with reddish hairs. Mouth very broad, shaded by a large lid, and the inside of the urn studded with prominent glands. The leaves are from 1 to 2 feet long, tough and shining, with indistinct nerves and a peculiar

tendrill beneath inserted not far from the apex. A dwarf plant not exceeding 4 feet, and of singular interest and beauty; it has, however, nearly disappeared from gardens, only two or three plants being now in cultivation.

N. Ratcliffiana.—A garden cross between *Hookeriana* and *Phyllamphora*, bearing medium-sized flask-shaped pitchers of green, spotted with red; wings variable in breadth, narrowing towards the base.

N. robusta.—A very free-growing cross from the same parents, producing strange pear-shaped vessels of dark green, streaked and blotched with brownish-crimson.

N. Rowanæ.—A distinct and little known plant of the Australian group, with stout stems of 2 to 3 feet, bearing pitchers 6 inches long by 3 inches wide, and in shape like the cap of liberty—curved at the base and broadly widening to a large mouth. They are finely marked with reddish-purple and deeply veined; hard outer ribs hardly to be called wings, and a lid smaller than the mouth, covered beneath with rounded glands.

N. rubra.—A rare species from Ceylon, of great beauty but not in cultivation; a plant of slender habit, bearing very large pitchers of bright red.

N. rubro-maculata.—A cross sent out by Veitch in 1882, but now rarely met with. Pitchers of pale green of medium size, spotted with claret-red and heavily winged; broad flat rim of deep red, and a red-spotted lid much smaller than the mouth.

N. rufescens.—A hybrid shrub from *Courti* and *distillatoria*, with long narrow leaves upon ruddy stems, bearing rounded pitchers of nearly 8 inches, green suffused with red.

N. Sanderiana.—A plant recently introduced from Sumatra by Messrs. Sander, and akin to *Rafflesiana* but distinct in its brighter colour and more compact habit. The vessels are about 6 inches long and fully half as wide at their broadest, narrowing rapidly towards the neck; they are deep green at the base, with crimson spots which thicken in the upper part of the pitcher into dense masses of colour. The wings are very wide, running the length of the pitchers, and of deep crimson, more intense on the outer face, and richer than upon the urns themselves. A new and useful addition to the group.

N. sanguinea.—A fine species, but rare in its own country, and very scarce in gardens. Its pitchers are variable, but at their best reach nearly a foot in length, of intense blood-red colour and soft downy texture. They are carried upon sessile, leathery leaves, which at their base clasp smooth triangular stems. Found at a height of 2,000 to 3,000 feet upon Mount Ophir, Malacca. A beautiful kind, but of slow growth and difficult increase.

N. Sedeni.—A cross of uncertain origin, but akin to *distillatoria*—a probable parent. A robust plant, profuse in small pitchers of light green, which are thickly blotched and spotted with brownish-red. A more highly-coloured form is grown as *S. rubra*.

N. stenophylla.—A Bornean species allied to *Curtisi*, with narrow leaves bearing long narrow vessels of 6 or 7 inches, green, with long streaks of ruddy purple; rim narrow, and lid small.

N. superba.—A garden hybrid resembling *Hookeriana*, but with some of the characters of *Sedeni*.

N. Tiveyi.—A handsome cross of good growth, with shapely enduring pitchers of dull green, streaked with reddish-brown markings, and a convex rim of brighter tone. Parents, *Veitchii* and *Curtisi-superba*.

N. Veitchii.—A fine species with a marked habit, its leaves appearing right and left of the stem in even ranks. It is a weak-rooted plant, living mainly upon dead trees or branches, and its pitchers entrapping beetles such as frequent rotting timber; its prevailing colours of dull reddish-brown harmonise strangely with such surroundings. Its pitchers are large, reaching (when wild) a foot in length, roundly narrowing to the base, with deep-toothed wings and a broadly rimmed crimson mouth, the ribs of which end in sharp teeth pointing downwards; lid very small. Common in Borneo. A fine plant, but slow in growth and delicate. Several forms of this plant are known, one with a pink rim, and a second in which the vessels are large, and blotched with dark red.

N. ventricosa.—A newly-imported plant from the Philippines, allied to *N. Burkei*, but distinct in the strange shape of its pitchers. These are 5 inches long, inflated at the base with a much narrower middle part, widening again to a broad funnel-shaped mouth. Like *Burkei*, they are smooth and wingless, hard and

tough in texture, and of a clear pale green with a bright crimson rim, deepening with age to reddish-purple. Awarded a first-class certificate by the Royal Horticultural Society in October, 1901. An interesting and singular plant, with short narrow leaves of leathery texture, and not of difficult culture.

N. Veillardii.—A rare plant from New Caledonia, and like *distillatoria* in habit, but easily known by the hoariness of the stemless leaves, bearing also grey or reddish-coloured tendrils. The pitchers are 7 or 8 inches long, hairy like the leaves and stems, and deep red in colour. A plant of stout growth but delicate under glass; probably not now in cultivation.

N. villosa.—A rare kind found only at a height of several thousand feet in the mountains of Borneo, of difficult culture, and perhaps not in cultivation. It is a handsome plant, growing upon the wet ground, and bearing large pitchers of pale green more or less marked with crimson, and of a downy texture from minute hairs, which are also found beneath the leaves and within the pitcher. They bear deeply-fringed wings in front, and a very wide ribbed rim around the mouth, prettily shaded with flesh-colour deepening to reddish-pink; lid small and raised high, of a rusty green freely blotched with darker colour. Often confused with *Veitchii*.

N. Wardii.—A fine large-pitched species growing in the Seychelles, but unknown in Europe save in a dry state.

N. Williamsii.—A fine cross between *Sedeni* and *Hookeriana*, of very compact habit and one of the smallest plants of the group, but free in pitchers appearing upon every leaf. They are of medium size, heavily blotched with brilliant blood-red, which deepens with age to a uniform intense crimson, extending to the inside of the vessel.

N. Wittei.—A garden hybrid of minor importance, allied to *Curtisi* and a second unknown parent.

N. Wrigleyana.—An American seedling from *Hookeriana* and *Phyllamphora*. A plant of free growth, bearing upon large leaves handsome pitchers of pale green, with crimson spots and narrow fringed wings. The neck is stout and rounded, with a green ribbed rim; lid small, covered with glands beneath, and bearing a spur at its base. One of the best American hybrids.

B.

THE AUSTRALIAN FUCHSIAS (*Correas*).

IN days when Australia was a new world, and the treasures of Botany Bay freshly brought to our doors, the growers of that time were enthusiastic over our sudden wealth of winter-flowering shrubs, giving glass-houses something of the summer brightness of the Land of the Southern Cross. In those days no one could foresee the present neglect of these plants, due in part to certain delicacy among many hard-wooded plants, in part to reaction against the monstrous trained forms adopted for too many of them; partly also to the spread of forcing, by which other flowers more docile in the hands of the grower came into competition with these winter-bloomers, and also because of the movement in favour of hardy plants which has become so marked of recent years. No one can deny that this movement is right and natural, and to the highest interest of British gardens, but it is equally certain that little floral brightness can be drawn from gardens at mid-winter however fine may be the effect of berry-bearing and bright-barked shrubs. A few greenhouse plants to tide over this season of dulness are therefore not out of place, and for winter and early spring

few hard-wooded shrubs are more useful than a selection of the Australian Fuchsias, with their neat habit, profuse tubular flowers, and easy management. They are useful for decoration, or in cut



GROUP OF CORREAS.

sprays as button-holes, for which they are uncommon, and may be prettily contrasted with *Erica melanthera* or some other of the fragrant winter-flowering heaths. Though usually flowered in

pots, where possible they might be given a trial planted out in the border of an airy greenhouse or conservatory, needing less attention in this way save in more frequent pinching, as a result of their freer growth. Bushes 6 to 8 feet high and nearly as much through, may be thus grown in a short time, and when so seen, few will deny the real beauty of these Australian shrubs. With the exception of scale, *Correas* are not much subject to insect pests, nor are they so sensitive to damp as many allied plants. Nearly all may be raised from seeds or cuttings, but the usual practice is to graft the better kinds upon the free-growing *Correa alba*, which in its own country forms a shrub 12 feet or more high, and so grown good flowering specimens are sooner formed. The details of their culture are the same as in most hard-wooded plants. When in full growth *Correas* should be freely watered, with a period of comparative rest after flowering. The best kinds are as follows:—

VARIETIES.—Most of the finer kinds have been raised as seedlings or crosses between the red-flowered *C. speciosa* and *C. virens*, the green-flowered kind. Fewer sorts are now found in collections than during the great days of hard-wooded plants some half-century ago, but most of the following are still sparingly grown in England and Belgium.

PALE-FLOWERED AUSTRALIAN FUCHSIA (*Correa alba*).—A robust plant soon reaching several feet in height, with whitish, rounded leaves, downy and punctured beneath; clusters of small and inconspicuous white flowers at the ends of the shoots, appearing from spring till mid-summer. There is a variety, *cotinifolius*, in which the whiteness of the foliage is more marked.

ROSY-FLOWERED AUSTRALIAN FUCHSIA (*C. bicolor*).—A cross between *alba* and *pulchella*,

bearing white flowers shaded rose, from January to April and distinct from its parents in its upright flowers, in which the mouth of the tube is widely open.

SCARLET-FLOWERED AUSTRALIAN FUCHSIA (*C. cardinalis*).—This is one of the best and most useful kinds, bearing single pendant flowers of bright scarlet, more than an inch long, shaded with pale yellow in the centre and tipped with green. It frequently flowers in mid-winter, continuing in bloom during a great part of the spring. It is a slender-growing shrub, needing careful pinching to keep it in shape without the use of stakes.

HARRIS'S AUSTRALIAN FUCHSIA (*C. Harrisii*).—A garden hybrid not unlike *cardinalis* (one of its parents), but of sturdier habit. Its lighter green leaves are more pointed, and its growth is finely spreading; flowers of bright scarlet.

WHITE-FLOWERED AUSTRALIAN FUCHSIA (*C. magnifica*).—The best white kind, with large flowers, has a long pale tube with prominent stamens borne on a shrub of strong, free growth. It does well planted out, and is not averse to cutting.

CORAL-FLOWERED AUSTRALIAN FUCHSIA (*C. pulchella*).—A distinct garden hybrid, bearing during the spring single drooping flowers of a pretty pale salmon colour, with a hairy throat. The leaves are oval, waved, and when young covered with down. A strong-growing, beautiful shrub, reaching a height of 6 to 8 feet.

SHOWY AUSTRALIAN FUCHSIA (*C. speciosa*).—A shrub beautiful in its finer forms but very variable in detail, and commonly regarded as the primitive form of all the garden varieties. Its growth is slender but compact, with leaves variable in shape and size, the stems and under surface of the leaves covered with ruddy hairs. The flowers are tubular or slightly inflated, often borne erect, and usually deep red shaded with green, but sometimes pale or even whitish, appearing from winter throughout the spring. The variety *major*, with deeply coloured flowers of large size, is the finest form of this kind.

YELLOW-FLOWERED AUSTRALIAN FUCHSIA (*C. sulphurea*).—A kind only distinct in the pale yellow colour of its flowers. Syn. *C. ochroleuca*.

BELL-FLOWERED AUSTRALIAN FUCHSIA (*C. ventricosa*).—A very distinct and pretty plant of elegant habit, bearing flowers of bright crimson, green at the tips, and the flowers inflated or bell-shaped instead of rigidly tubular. It is still a favourite in collections for its beauty and daintiness of form.

UNDERWOODS AND GAME.

[To the Editor of FLORA AND SYLVA.] Sir,—I have been very much interested in reading the article on page 1 of the October number of FLORA AND SYLVA, dealing with the management of woodlands. If at some future time you dealt with the same subject from another point of view, I think others would be benefited besides myself. I refer to the point of view of the game preserver. I have not yet discovered how to combine the improvement of my woods from the economic standpoint, and the improvement of them as *pheasant holders*. In East Anglia the value of a property depends in a great measure on the quality of the shooting, and it is of the greatest importance that the coverts should be so planted and maintained that they fulfil the following conditions: 1st, that they give shelter from cold and persistent winds; 2nd, that they should provide covert for the game; and 3rd, that they should be planted to a certain extent with berry-bearing trees and shrubs. This last is not very often done, I think, and yet it is obvious that pheasants will be more likely to stay at home if they get the kind of food they like.—Yours truly, ENQUIRER.

(1.) In good planting there is nothing against giving shelter to birds from cold winds. There must always be a certain amount of evergreen planting in the best work, and some of these things give good shelter, the most rapid growth, and the greatest increase of timber, apart from beauty. (2.) In planting even from the economic standpoint, there may be sufficient covert for game between the underwood and the various young woods, which in any well-managed estate should be planted yearly. This should certainly, in woodlands of any account, give all the covert that is necessary. (3.) We have several hundred acres of covert land and our experience is that native berry-bearing things, such as the wild Brambles, are as good or better than anything else. Where coverts are large it would be a serious labour to plant with exotic shrubs, save in patches. In many districts the best berry-bearers—the Blackberries—come of themselves. * * *

THE GLORY OF THE SNOW (*Chionodoxa*).

IF somewhat clumsy for common use, few names are more suggestive than this of brightness and purity, and conspicuously bright and pure are the hardy little flowers it represents, flowers vying with the Snowdrop, the Crocus, and the Winter Aconite for first honours in the frost-bound garden, and glowing with a beauty and richness of colour second to none of them. The first of this little group was reported by a French traveler in Asia Minor, but not until thirty-five years later was it re-discovered in quantity and brought into cultivation by Mr. George Maw, who lighted upon it when exploring the mountains around Smyrna in search of Croci. The plant was found upon the mountain side at heights varying from 3,000 to 4,500 feet, but (being then May) at the lower levels was already out of flower. Not until nearing the summit was it met with in full beauty, when of a sudden a wide stretch spangled with flowers revealed itself, mostly blue and white with the densely clustered *Chionodoxa*, but mixed with a rich profusion of Tulips, Fritillarias, Snowdrops, Scillas, Colchicum, and Gageas, the whole spreading in one bright carpet away towards the whitened summit until they mingled with the melting snows. Even such a botanist and traveller as Mr. Maw declared it to be one of the grandest flower-pictures he had ever seen. Bulbs brought away by the finder first flowered in England in March 1878, proving their value as a plant hardy in British gardens where to-day its beauty

and charm are becoming increasingly familiar.

The Chionodoxas may be grown from seed or from imported bulbs; if

from the Levant the bulbs are usually gathered before fully ripe and do not regain their true vigour and character under two or three seasons, but home-grown or Dutch bulbs are now plentiful and free from this objection. In light fertile soil seedlings flower in their second year, and when once well established the plants sow themselves freely in most gardens and soon form strong colonies. Wherever the soil suits them bulbs should be planted in broad masses and left to spread at will, growing more vigorously and flowering earlier when quite undisturbed. They may be freely used in grass, the stout erect stems showing finely in this way, while the plants die down so early as to be out of the way of the mowing machine in most gardens. Used in broad patches their fine blue colour is distinct and good at quite a distance, commencing early in February to full beauty a month later, and though the individual flowers are soon over, strong stems bear from eight to a dozen blooms, so that the display is long continued. Blooming before the Squills they may be planted with the Snowdrop for the sake of their rich contrast in colour. Being very sensitive to aspect and sun-heat nothing is easier than to arrange successive groups in sunny and colder parts of the same lawn or rock-garden, under and around deciduous shrubs, or any corner where

their early disappearance is covered by the growth of later plants. Though grown without care in most gardens there are a few in which the Chionodoxas do not thrive, increasing slowly or not at all, but this experience is comparatively so rare that few need hesitate to make free use of these charming plants, their moderate price placing them within the reach of all. In spite of their earliness in flower the bulbs remain long at rest and may be safely planted at any time during September.

As is not uncommon with plants seeding as freely as the Chionodoxas,

many of the kinds run closely into one another and are more distinct in

name than appearance. Even when typical kinds are distinct enough in themselves they are linked with other sorts by a series of intermediate flowers in many shades of colour and with differences of structure that render classification difficult. Well-marked sorts are *Luciliæ* with flowers of varying shades of blue; *gigantea*, a bolder variety of *Luciliæ*, with flowers of a soft lavender colour; *sardensis*, also a mere variety, but of a deep bright shade; and *nana*, a species distinct in form, with smaller flowers of pale blue. Though much scarcer, white forms are to be had of nearly all the kinds, and a few rosy or lilac varieties; there is also a curious hybrid plant between the Chionodoxa and *Scilla bifolia*, for which the name Chionscilla has been suggested. The flowers of this plant are large and pretty, mostly self-coloured, though a few are lighter towards the centre and their

beauty is increased by pale yellow anthers in fine contrast with the prevailing tones of blue; this goes far to atone for the loss of the white centres so attractive in the *Chionodoxa*. These crosses are, however, uncommon and too slow of increase to have more than a limited interest. The *Chionodoxas* are classed by botanists as follows:—

CRETAN CHIONODOXA (*C. cretica*).—A native of the mountains of Crete, with white or pale blue flowers borne sparingly upon long slender stems; akin to *nana* but of larger growth. Not free enough in flower for garden effect.

GLORY OF THE SNOW and its varieties (*C. Luciliae*).—The commonest and best kind, opening from early in February, with starry flowers an inch or more across and in many shades, from pale to deep blue, shading to a white centre. It is a stout grower, rising about 6 inches, with narrow erect leaves and sometimes a score of flowers upon one spike, though eight to fifteen is the usual number. As an early plant of fine colour and little affected by bad weather, it has few equals among winter flowers. It is found in three or four well-marked forms, and several minor colour variations have received names. These include *alba*, a pure white kind with large flowers, found wild with the blue form but scarce in gardens, its seedlings rarely coming pure though prolific in pale shades. *Rosea* is a scarce variety bearing pink flowers; *pallida*, flowers of a very light blue; and *Boissieri*, showing bright, deep colour.

ALLEN'S CHIONODOXA (*C. L. var. Alleni*).—Though said to come from Mt. Taurus, authorities consider this to be merely a selection of the next kind, and inseparable from it. Its flowers are, however, rather earlier in opening, numerous, of large size, and nearer blue in colour than the usual form of *gigantea*.

LARGE-FLOWERED CHIONODOXA (*C. L. var. gigantea*).—A distinct garden variety of *Luciliae*, also known as *grandiflora* from its large flowers. The plant is of strong robust habit

with broader leaves and taller spikes than in any other kind, though the flowers are sometimes few in number. Their colour is soft violet or porcelain-blue with a small white centre, coming some weeks later than the early kinds. A fine white form of this plant is now to be had, and a variety *albo-rosea*, with flowers delicately tinged with rose.

DEEP BLUE CHIONODOXA (*C. L. var. sardensis*).—A variable form of *Luciliae* regarded as a distinct kind by some botanists but at Kew held to be a mere variety of the common species. At its best it is a beautiful plant with flowers of rich deep blue, free from the pale shading of other kinds, the white eye being sharply defined. In habit it is less stout than



CHIONODOXA SARDENSIS.

Luciliae and smaller in flower, but very graceful and fine in colour for massing in grass or within nooks of the rock-garden. It flowers during February and March according to aspect and conditions of soil, the effect of its bright flowers and bronzy foliage being very telling. It is a little slower to increase than some, but fully as hardy, and in some districts the first to flower. It is easily grown indoors for the conservatory but loses strength and colour in heat, and should be kept close against the glass and very cool. Several varieties are grown in gardens, including *alba*, a good white form, and *alba-major* with larger flowers carried in fine spikes; *oculata*, a scarce kind in which a deeper ring surrounds the white disk; while in some cases the flower comes of a uniform deep blue but can hardly be said to gain by the loss of its white eye. The plant

derives its name from the ruins of the ancient Sardis, its home in Asia Minor, where it is found growing at from 4,000 to 5,000 feet.

LATE-FLOWERING CHIONODOXA (*C. L. var. Tmoli*).—A dwarf variety of strong growth and latest of any in bloom. Its large flowers, freely produced, are of rich bright blue with a large white eye faintly outlined in purplish-blue, and with a touch of deeper colour on the tips of the petals; its lateness is, however, its great feature. This kind is said to need a damper situation than its fellows, and certainly its growth is more vigorous in a moist spot.

DWARF CHIONODOXA (*C. nana*).—A distinct dwarf species from Crete, rarely more than 4 inches high and not much planted for effect. Its flowers are small but attractive, and carried in dense spikes of white or pale bluish-lilac.

LYCASTE MARY GRATRIX.*

THE group of *Lycaste* contains some of the most useful and showy of orchids with a flowering season during the dullest days of winter and early spring. They are mostly from Central America and the West Indies, being found at fairly high altitudes where much rain falls during their season of growth. Up to the present few good crosses have been obtained among these plants, the most distinct and beautiful yet sent out being the fine new kind shown in the plate. This seedling was raised by Messrs. Charlesworth of Bradford as a cross between *Lycaste Skinneri* and *L. macrophylla*, and was first exhibited by Samuel Gratrix, Esq., of Whalley Range, Manchester, being named in honour of Mrs. Gratrix. The finest plant yet shown was exhibited early last year at the Drill Hall, Westminster, by Capt. G. L. Holford; it carried seven fine flowers, the brilliance and beauty of which are well shown by the artist.

The *Lycaste* are of easy culture, needing little heat, the cool intermediate-house suiting them best. Good fibrous loam and peat with a little leaf-soil, chopped sphagnum, and coarse silver sand, makes a good compost for the plants; plenty of drainage should be added, for, while growing, the plants delight in water, providing that it passes away quickly and that abundant air is admitted at all times. When at rest less water is needed, but they must never become dry.

H. ALEXANDER.

Westonbirt, Tetbury, Glos.

TREE FAILURES.—[To the Editor of FLORA AND SYLVA.] SIR,—In things treated of in garden catalogues one may be said to live in a world of adjective and strong description. Sometimes these adjectives are justified, but too often they are not. It is not a great matter when it merely concerns a little Alpine flower described in a catalogue as a “tremendous bloomer,” but if we have to deal with trees involving perhaps heavy preparation of the ground and much cost, then it becomes a more serious thing. I have for many years heard great things of the Japan *Cryptomeria*—“an avenue fifty miles long of this great tree, with trunks straight as arrows and 150 feet in height”—and I have always had hungry eyes for it wherever I went, either in England, Scotland, or Ireland. As a result I never saw one that promised to be such a fine tree, and there would seem to be something in our climate or rainfall which is against it. It lives, and is hardy enough, but that is not all we want in a tree of its great character; and if we know a tree to be a failure, surely it is much better to own it frankly, and cease cumbering the ground with things that will never do any good in our country. Very often in the places where we see such failures scattered about, trees of greater value, which succeed perfectly in our country, are not seen. The same fault is shown by other trees of this small group, such as the variety *Lobbii*, and the *C. elegans*, which is not even hardy. It is a form of *C. japonica*, which, like so many of the conifers, has a habit of sporting into different shapes of shoot. I had a dozen trees destroyed in one hard, snowy winter. No doubt it is hardy in sheltered places near the sea, but that does not justify its general use. Other forms of this tree are open to the same objection. If the wild tree does not succeed, we may be sure that none of its varieties or sports will do any better.—I am, Sir, A PLANTER.

* With coloured plate from a drawing by H. G. Moon, from a plant at Westonbirt.



LYCASTE MARY GUTHRIE

THE BROOMS OF THE CYTISUS GROUP.

IT is sometimes the fashion to belittle the value of yellow-flowering shrubs and plants because, forsooth, Nature has been lavish in her use of this colour, and what is common is undervalued. And yet what in Nature is more cheerful than a wide stretch of golden Furze such as gladdens the heart in early spring—the meadows with their Buttercups, the stream-side with its Marsh Marigolds, or the hills of southern Europe clothed from top to bottom with the same reflected sunlight only more varied in kind? Or again in autumn, the all-pervading yellows and ambers form a fit setting for the passing touch of flame from point to point, where a like profusion of crimson and scarlet would jar upon the senses. To look down from the heights of Savoy or the Canton de Vaud upon a land of gold bathed in clear sunlight when the vineyards of France and Switzerland are ripening for the fall is such a sight as makes one hesitate to condemn anything because it is *only yellow*.

Amongst golden flowering-shrubs few are richer in their display than the

*Their Value and
Beauty.*

Brooms, for though other colours are represented shades of yellow prevail, and as soon as one kind fails another takes its turn until from early spring to late autumn it is possible to rejoice in the rich radiance of the *Cytisus* group. They have their faults; they are difficult to transplant; are apt to become bare and leggy below, and sometimes, especially when grafted (though

this is hardly a fault of their own) are liable to die off of a sudden without apparent cause. On the other hand, their merits are no less pronounced, being for the most part hardy and profuse in flower and seed, free from disease and insect foes, growing well in dry and even poor ground, upon hot banks and other spots unsuited to border plants. Some sorts thrive perfectly in heavy, uninviting soil, while by using kinds of varied colour, such as the White Broom and the rich crimson-brown of André's Broom, it is possible to produce effects of great beauty at a trifling cost whether in the rock-garden, the shrubbery, or pieces of rough ground which are otherwise an eyesore and a perplexity. Many kinds come freely from seed scattered here and there, if care be taken to give the young plants some little protection from accident in their earliest stages; it may also be taken as an axiom that no kind should be grafted that can possibly be made to do well on its own roots. The following kinds have found a place in gardens for their hardiness and beauty:—

THE WHITE SPANISH BROOM (*Cytisus albus*).—A native of Spain and Portugal, flowering in May. It is of quick growth, reaching a height of 5 or 6 feet in three or four years from seed, while old plants sometimes reach 15 feet, but are then apt to become naked below. When thickly covered with its white blossoms, borne in long racemes, there are few finer flowering shrubs, and beautiful effects may be gained by massing it in a bold way with one or other of the Golden Brooms; it bears but few leaves, which are silky and divided in threes. The plant ripens seed in abundance, from which young plants are easily raised, taking care to pinch frequently in their early stages to encourage a good base. Two or three varieties of

this kind are grown: *incarnatus*, bearing flowers tinged, especially when in bud and newly opened, with pink or reddish-purple; *multiflorus*, a free-flowered garden variety with flowers of creamy white; and *grandiflorus*, with blossoms that are larger and of a fine pure white. To this plant belongs a confusing list of synonyms, classing it with *Genista*, *Spartium*, and *Sarothamnus*, but it is well known by its English name.

ALSCHENGER'S CYTISUS (*C. Alschengeri*).—The plant bearing this name is really related to the Alpine Laburnum, now separated from the true *Cytisus*. It is profuse in flowers, of a pale yellow, borne in very long racemes, reaching as much as 18 inches in length. Croatia.

DWARF ALPINE CYTISUS (*C. Ardoinii*).—A low trailing shrub only growing 4 to 6 inches high, and a little gem for the rock-garden. It is covered during April and May with a profusion of deep golden flowers, thriving in dry and sunny spots, its silky trifoliate leaves carried upon fine rod-like stems. It is a scarce plant even in its home amid the Maritime Alps, having been found only upon three mountains at from 3,500 to 4,000 feet, and exposed to the nibbling of goats, which destroy flower and seed alike. It may be increased from cuttings in the autumn.

SILVER-LEAVED CYTISUS (*C. argenteus*).—A silvery-leaved plant found in the Maritime Alps, its leaves and stems densely clothed in thick white down, and growing in the sunniest and most arid spots.

AUSTRIAN CYTISUS (*C. austriacus*).—A hardy deciduous kind from the east of Europe, growing as a compact leafy bush of 2 to 4 feet, bearing terminal clusters of yellow flowers during early summer and again in autumn. Like so many of the *Cytisus*, its leaves and stems are covered with whitish down. It is grown in two or three distinct forms: *leucanthus*, showing paler flowers than the type; and *axillaris*, a new kind bearing its flowers in the axils of the leaves instead of at the end of the shoots. Syn. *Rocheli*.

BEAN'S CYTISUS (*C. Beanii*).—A cross between *Ardoinii* and *biflorus*, which originated in the Royal Gardens, Kew. It is a dwarf, prostrate shrub with the habit of *Ardoinii*, useful in masses for the rock-garden, its golden yellow flowers coming early in May.

TWIN-FLOWERED CYTISUS (*C. biflorus*).—The earliest of the Brooms, opening its flowers in mid-April, even before *albus* and *præcox*. It is a deciduous shrub of neat habit, growing very freely and about 4 feet high at most, though it often makes shoots of 2 feet in a season. The bright yellow flowers appear in the axils of the leaves throughout the long shoots, coming (spite of its botanic name) as often in threes and fours as in pairs. It is quite hardy, and a fine plant for the open shrubbery. A long list of synonyms apply to this plant, including *elongatus*, *ruthenicus*, and *supinus*; *serotinus* and *uralensis* are mere forms of *biflorus*, and, though the last is distinct in its larger leaves and flowers, it is linked to it by confused intermediate varieties.

HOARY CYTISUS (*C. candicans*).—A robust downy shrub found throughout the south-east of Europe, from Italy to the Levant, bearing its yellow flowers somewhat sparsely at the ends of the shoots during summer.

CANARY ISLANDS CYTISUS (*C. canariensis*).—A tender shrub flowering under glass and useful as a succession to the spring-blooming greenhouse kinds. It is of dwarfer habit and not quite so free in growth as *C. racemosus*, its yellow flowers appearing in long one-sided spikes throughout the summer, upon the slender much-branched shoots.

CLUSTER-FLOWERED CYTISUS (*C. capitatus*).—A low semi-evergreen shrub common in the outskirts and clearings of sunny woods throughout central and southern Europe, bearing clusters of pale yellow flowers at times shaded with bronze, at the tips of the long erect shoots. Though less showy than some kinds its habit is neat and compact, and it flowers from the middle of July into autumn when few sorts are in beauty; the leaves are numerous, trifoliate, and softly hairy in every part. It is sometimes seen grafted upon tall standards of Laburnum, but is finer in its low form, and easily raised from seed.

TRAILING CYTISUS (*C. decumbens*).—A dwarf, prostrate shrub from eastern Europe, with large pale yellow flowers in long erect spikes coming from June till August. It is a scarce plant, but where obtainable is very pretty in the rock-garden.

WEeping CYTISUS (*C. filipes*).—A very beautiful greenhouse plant of singularly grace-

ful, drooping habit, flowering under glass from December throughout much of the winter. Its small white flowers are thickly set upon long wisp-like trails which are nearly leafless. Though introduced many years ago from Teneriffe, it is a scarce plant, not easily increased from cuttings and rarely



CYTISUS PURPUREUS ALBUS.

ripening seed ; it is usually grafted during summer, as a low standard upon the Common Broom or the Laburnum. Its grace of form and flower give it a special value for

the conservatory during winter ; during summer it may be grown in the open, and wintered in any house secure from frost. Strong plants put out in a greenhouse border grow into fine bushes many feet in height, of rich effect when in bloom and very useful for cutting.

SWEET CYTISUS (*C. fragrans*).—Another beautiful kind from Teneriffe, easily grown in a cool greenhouse or even a room secure from frost. Its fragrant white flowers appear at the end of April or early in May upon the long leafless shoots, which reach a height of about 6 feet at maturity, but may be kept low by cutting back after flowering. Syn. *Spartium nubigenum*.

THE ITALIAN CYTISUS (*C. glabrescens*).—A hardy plant from the mountains of North Italy, and almost untried in gardens, though pretty as a rock-plant. It forms a small bush with the pendulous habit of *C. purpureus*, but with golden flowers crowded in the axils of the leaves ; these are deciduous, smooth above, and covered with soft hairs beneath.

THE HAIRY CYTISUS (*C. hirsutus*).—An old hardy plant, widely distributed over the south and east of Europe and Asia Minor. It is a dwarf shrub 1 to 2 feet high, with trailing stems and yellow flowers in June and July, and useful in the rock-garden or the front line of the shrubbery. The hairiness referred to exists only upon the young growths, the adult leaves being smooth. It is a plant of many names, including *falcatus*, *polytrichus*, and *triflorus*. A plant bearing the name *hirsutissimus* has of late found its way into trade lists with the following description : A low shrub, bearing grey down-covered leaves and large flowers grouped in clusters of five in the axils of the leaves ; of a bright golden yellow upon opening, they fade to a reddish-bronze colour.

THE KEW CYTISUS (*C. kewensis*).—A beautiful prostrate plant raised in Kew Gardens as a cross between *Ardoinii* and the common White Broom, but distinct in habit from both parents. It spreads by long trailing shoots, rising only about 3 inches, but in old plants, covering a wide surface. Its flowers, of a creamy white or pale yellow, are large and numerous, thickly covering the pendant shoots during May and June, their colour often paling with exposure. As a trailer amongst rocks, or in masses for covering a bare surface, this pretty plant is a decided gain.

FINE-LEAVED CYTISUS (*C. linifolius*).—A native of the south-west of Europe and northern Africa, and unlike any other of the group. It forms an erect shrub of 4 or 5 feet, with narrow Rosemary-like leaves and a profusion of yellow flowers at the ends of the shoots in a long succession from spring to early summer. Being somewhat tender it can only be used in the open in gardens of the south and west, but is worth a place under glass in colder districts for its pretty and distinct habit and early flowers. Syn. *Genista linifolia*, and *Spartium linifolium*.

THE MADEIRA CYTISUS (*C. monspessulanus*).—A tender quick-growing shrub from the Mediterranean region, and only hardy in southern and coast gardens; its yellow flowers appear in May.

SUMMER-FLOWERING CYTISUS (*C. nigricans*).—One of the best and most useful of the Broom family, distinct in colour and flowering continuously from June into September. It is of neat habit with long slender shoots reaching 6 feet or more when full grown, perfectly hardy and thriving in dry warm ground, but as the roots run deep it needs sufficient soil. The flowers, of a clear pale yellow, are borne in long erect spikes of 9 inches at the ends of the new growths; young plants making plenty of growth, and easily raised from seed, are best, while old plants may be cut back in early spring. The leaves, formed of three leaflets, are deciduous, downy, and dark green, fading to a black colour when cut—a fact to which the plant owes its specific name. Though introduced from central Europe in 1730, it is not a common plant, though its long season of bloom and its beauty as a shrub deserves wider recognition. Two or three varieties of this

plant are grown in *longispicatus*, with longer spikes of flower, and *Carlieri* with a long season of bloom and showing flower-spikes and reddish seed-pods intermingled. In foreign lists it is often called *Lembotropis nigricans*.

EARLY-FLOWERING CYTISUS (*C. præcox*).—A plant originating as a chance cross between *C. purgans* and the White Broom—which it nearly resembles in habit. It bears a profusion of cream or sulphur-coloured flowers from early in May, and, though very hardy, should be planted in a sheltered spot with some protection from wind, or its flowers are soon marred in bad weather. Grouped amongst rocks, it becomes a fine object, one mass of bloom when in flower and tall enough to be conspicuous at a distance. On becoming naked old plants are best renewed from cuttings, as they do not break freely when cut back and rarely come true from seed; young plants, pinched frequently in their early stages, are better in every way.

THE PROLIFERUS CYTISUS (*C. proliferus*).—A tall fast-growing shrub from the mountains of the Canary Islands and parts of Portugal, where it reaches a height of 25 feet, the young shoots being used as fodder for cattle. In British gardens it is tender save in mild and coast districts; as a seaside shrub it is of value, being unharmed by the washing of salt spray. As a greenhouse plant it flowers in April and May with clusters of white flowers upon its long silky stems. A variety *palmensis* from Teneriffe is very graceful in habit, with broad silky leaves of three leaflets and pure white flowers in mid-winter, earlier by many weeks than the type. Both kinds are far from common in gardens.

SWEET FRENCH CYTISUS (*C. purgans*).—An old plant but one not often seen in gardens. It grows as a low bush of 2 or 3 feet, in habit not unlike the White Broom but with branches shorter and more rigid. Though less free in growth and in flower than many of the *Cytisus*, its blossoms, coming in April and May, are of a rich intense yellow and fragrant, while the plant retains its good habit longer than many kinds. It is easily increased from seed or cuttings under glass in August, the young plants being pinched to encourage a bushy habit. A native of the mountains of France and Spain, it is quite hardy, preferring a dry and sunny spot.

THE PURPLE CYTISUS and its varieties (*C. purpureus*).—A beautiful hardy plant from eastern Europe, generally grafted standard high upon the Laburnum and (in that way) very short-lived; it is far finer on its own roots as a low spreading bush in the border or rock garden, its long drooping shoots hung with a profusion of bright purple flowers from May onwards. It is so readily increased from seed or cuttings that there is no need for grafting. This fine plant is grown in several varieties distinct in habit or colour of flower, of which the best are *albus*, with pretty white flowers borne in long curving wreaths, the beautiful effect of which is shown in our engraving; *atropurpureus* with flowers of deep purple; *albocarneus* with large flowers borne in threes, rosy white on opening, deepening to rosy lilac, with leaves and stems covered with down; *erectus*, a fine kind with flowers deep in colour and a rigid upright habit; *incarnatus*, with fewer flowers but large and variously shaded with rose and lilac; *pendulus*, grown as a standard, with slender weeping branches; and *superbus*, with large clusters of rosy lilac.

THE BEAUTIFUL CYTISUS (*C. racemosus*).—A common greenhouse plant raised in large quantities for its bright golden flowers in early spring, when young plants are very useful for table and window decoration. Cuttings are easily rooted in early spring and grown to flowering size by the following season, being gently forced into flower as required. Old plants put out in the border of an airy greenhouse or conservatory where the room can be spared grow rapidly into bushes many feet high. The origin of the plant is uncertain, but it is a supposed cross between two of the *Cytisus* from Madeira. Many so-called varieties of this plant have been raised and named by florists, but few are really distinct; *elegans* forms a low dense head with larger leaves of grey-green with long narrow leaflets and large flowers; *trifoliatus* is a little longer in its racemes and has a long season; and *everestianus*, a fine form, is darker in colour of flower and more hairy in leaf, with a profuse show of bloom.

THE RATISBON CYTISUS (*C. Ratisbonensis*).—A low shrub akin to *hirsutus*, not exceeding 3 feet, and very free in its golden flowers during May.

THE SCHIPKA CYTISUS (*C. schipkaensis*).—

A newly-introduced plant of low spreading habit, flowering in a long succession from the end of June, after many of the Brooms are over. The flowers, of a yellowish-white, are borne in clusters at the ends of the shoots, after the manner of *capitatus*. It is a pretty and distinct plant, very hardy, and may be grown upon its own roots as a prostrate trailer for the rock garden, or grafted as a low standard with a dense drooping head. Syn. *C. Frivaldskyanus*.

THE COMMON BROOM and its varieties (*C. scoparius*).—The large golden flowers of this fine native plant are too well-known to need description. The plant has been valued for its industrial uses during centuries when beauty was of small account; it has served for fodder, for brooms, in the brewing of beer, and the making of pickle, the weaving of coarse cloth and twine, and (in times of scarcity) its seeds, roasted and ground, have been used as a substitute for coffee. It has also played its part in history and art, while for beautifying ugly dry spots easily and without expense there is, perhaps, no plant its equal, and at the present time it is being much sown in North America for its beauty in the landscape. Though a native wild plant, the Broom sometimes suffers in severe winters, especially when upon low, rich ground; in this way it shows itself less hardy than the white and early Brooms (*Cs. albus* and *præcox*). There are several fine varieties of the Common Broom but none of them quite so vigorous and robust as the wild plant. The finest is André's Broom (*C. Andreanus*), in which the lower petals are richly shaded with crimson or bronze colour. This kind originated with a wild sport found growing in Normandy, and, while rather difficult to raise from cuttings, layers will root and a good percentage come more or less true as seedlings, of which the best only should be selected, many being dingy in colour. When grafted it never lives long, often disappearing suddenly; but on its own roots it is as indifferent to conditions as any of the Brooms, fine mature plants reaching a height of 12 feet or more, fully branched, and of great beauty when in flower. To enjoy its rich effect a group of André's Broom should not be too distant, its contrast of colour being best seen close at hand. The Moonlight Broom is a second colour form (bearing the name *albus* or *pallidus*) with flowers creamy-yellow rather

than white, pretty, free flowering, and distinct in effect; this hardly differs from *sulphureus*, a variety pale yellow in colour. Variation in habit is shown by *pendulus*, a dwarf shrub with large flowers and pendant shoots, sometimes well used to drape boulders or ledges in the rock-garden; and *cantabricus*, a similarly prostrate form with fine flowers and silky leaves and stems, found as a wild plant in the mountains of Spain. At one time a double-flowered form of the Common Broom was in cultivation, but if still in existence it has become very rare in gardens, though the usual sport with variegated leaves and stems is not wanting. The Broom is also known as *Genista scoparius* in England, and *Sarothamnus* or *Spartium* upon the continent.

STEMLESS-LEAVED CYTISUS (*C. sessilifolius*).—A pretty shrub from southern Europe, with small leaves of glossy green and almost stemless, and short erect spikes of yellow flowers in May. It is of upright habit, neat and distinct, reaching a height of about 6 feet. Though rarely seen in England it is well grown in the Dublin Botanical Garden. Syn. *Lembotropis sessilifolius*.

EVERGREEN CYTISUS (*C. stenopetalus*).—A greenhouse plant from Madeira, akin to *racemosus* and possibly one of its parents, but hardly so good for all purposes. Its leaves are similar in shape only larger and of a more glaucous green, and the flowers, if larger and bright in colour, are looser and less shapely in the spike. It reaches a height of 6 feet or more, thriving under the same treatment as other greenhouse kinds, and when full of flower during May and June is none the less a beautiful object. Syn. *C. splendens*.

MANY-COLOURED CYTISUS (*C. versicolor*).—A peculiar plant coming as a cross from *purpureus* and *hirsutus*, and like the Purple Cytisus in growth and outline. Its leaves and shoots are, however, thickly pubescent and its flowers, appearing in May, pass from creamy-white to rose and lilac, the several stages showing in the same cluster. Though not a new plant this hybrid is uncommon and distinct.

The many forms of Laburnum, including the peculiar graft-hybrid once known as *Cytisus Adami*, are now classed by themselves in a separate group.

B.

THE LESSER PERIWINKLE

(*Vinca minor*).

A FRIEND who has been spending a short holiday at Cannes and elsewhere along the Riviera in search of sunshine found rain instead, but adds, "I am charmed with some of the gardens which lie back from the road, in the gorges, and in sheltered little 'cups' in the hills. The Palms are splendid here now, of many rare and noble kinds, but they are not for us in England, and I see more and more that the best hardy things are to be our salvation or mainstay in British gardens. The prettiest thing I have seen here are big sheets of the small Periwinkle on dry banks, a level, solid sheet of flowers. The growth is cut down every year. The colour is good, and I had no idea so much beauty could be produced by a plant we so often neglect or forget altogether." Unkempt and uncared for in moist or shady places, this plant, plentiful with us, is but seldom seen in a fine state; still here we find it notable even in a land of Palms, Bamboos and Reeds, of Tea Roses, Acacia, Violets, and hundreds of other bright and fragrant flowers. The secret of its beauty at Cannes may be that its flowering stems are mown off at once after flowering; in any case an open sunny position seems to be essential. Perhaps such a pretty little evergreen would be more highly valued if it were rare and costly. How often is this the case in even the best of gardens. The eternal struggle after rarity, or what often proves to be meretricious novelty, instead of studying the right use and situation for well-known and beautiful things in masses.

Those who have bare, sunny banks, or rocky slopes might clothe them with a carpet of this beautiful little Periwinkle.

F. W. BURBIDGE.

LANDSCAPE AND WOODLAND PICTURES BY THE MASTER PAINTERS.

OUR engraving this month is from a characteristic canvas by Arnold van der Neer, a clever Dutch landscape painter,

shown in our engraving. The peculiar play of light and shade seen by moonlight, with its effect of half revealing and half concealing details of landscape and woodland, is cleverly rendered in many of his works. He flourished in the middle of the seventeenth century, being born in Amsterdam in 1619. Good examples of his work are to be found in the National Gallery.



MOONLIGHT SCENE BY VAN DER NEER.

though hardly of the first rank. His work is essentially Dutch, showing at once the peculiar merits and limitations of his time and people—an artistic rendering of common scenes with a painstaking, almost painful, faithfulness to detail, rather than anything visionary or ideal in conception or execution. He was particularly noted for his treatment of moonlight scenes such as that

TREES AND THE WEATHER.

A CLOSE study of the meteorology of a district, and of its woodland history, reveals to the forester all its weak points and exposed belts. Each of these should receive treatment according to the form and age of the trees dealt with. Cutting should usually be done in a line opposed to that of the prevailing winds, in order to gain protection for the trees left standing and for young plantations, though it is chiefly the old trees which need this care. When dealing with trees in the plain the best way is to cut from

the centre to the outer edge. Where the under-wood system is in force it will be seen that the danger from wind is less when tall trees shelter the young growths, since old trees protect the saplings and young standards. On the outer edge it is well to keep sheltering clumps of trees to break the wind along exposed parts of all great woods. These should receive special treatment apart from the wood proper. In the same way for Pines on mountain slopes, the work should always go on in a direction opposed to that of the prevailing wind. It might be well also if, as in certain provinces of central Germany, neighbouring owners agreed upon zones of shelter and defence, wherever great tracts of woodland are similarly exposed. In any case it is wise to maintain on the outskirts of the wood some screen for separating the forest proper from pasture land. This screen will vary in breadth according to the altitude of the woodland, the character of its ground surface, and the force of the wind.

Late and early frosts do much harm by destroying the young shoots in the spring, and
Frost. severe winter frost, by injuring the inner bark-layers, causes canker, at first superficial, but eating deeper and deeper into the trunk, and giving rise to all sorts of defects. The only means of protecting trees from this danger lies in such a knowledge of each species as enables the planter to choose for it the situation which is freest from risk. Loss through sudden fall in temperature has less to do with the actual degree of cold than with the conditions which accompany or follow it. Sudden changes from cold to heat are far more dangerous—other things being equal—than slow changes; a frosty night followed by a bright day may cause frost-bite at points exposed to the sun's rays, when in other parts the trees escape. In sandy, friable soils such as are easily pierced by intense cold, frost-bite and kindred ills are of more frequent occurrence than upon clay, chalk, and (especially) peat soils. Smooth-barked trees also are more liable to injury than others. By choosing for evergreen trees a cold aspect we ensure a more gradual transition from cold to heat; also in hollows exposed to late spring frosts it is well to plant the trees least apt to suffer from cold, or such as are late-leaving.

The dread effect of lightning on trees is shown in many ways, from partial stripping of bark or the single furrow
Lightning. which bears witness to its passage, to the stroke which shatters the trunk of great Oaks. Often other trees near are killed by the same stroke though to all appearance untouched. Why one tree should suffer rather than another has been a matter of discussion, some thinking it due to the pointed form of the tree, others to its density of leaf, and others again to the near presence of water. More recent knowledge tends to show that it lies rather in the conductivity or certain kinds, and their green or dry state. It would seem more natural that an Oak, with its taproot striking down to water-bearing strata, should be more exposed to lightning than the Beech, with its shallow root-system.

Woods are often injured or overwhelmed by early or late snow falling upon trees in leaf.

Snow and Landslips. Even in England enormous damage happened all over the country to Oak woods

by fierce snow storms some years ago. Pine forests upon the lower mountain slopes often suffer from this cause. Its effects may be minimised by clearings carefully made at the right time and place. Landslips may be prevented by trenching, staking, or buttressing the ground with stone or masonry, and behind these artificial defences—liable to decay as they are—should be planted a more lasting one in the shape of Swiss Pines. Landslips very often occur in stiff or clay soil when trees are removed, and it is important not to cut down trees on such slopes, or it should be done at different times. Wholesale clearings may lead to serious trouble. By roadsides the removal of trees may do serious damage. In a forest or plantation liable to slip great care is needed to prevent such accidents.

There was an impression at one time that forests kept off hailstorms, but numerous ex-

Hail, Rime, and Sleet. amples might be given of trees bearing within their stems the wounds caused by

heavy hailstones even after twenty-five or thirty years, and covered by that number of successive woody layers. Rime and sleet cause serious injury by depressing the shoots of saplings and snapping the branches of old trees.

FLORA

AND SYLVA.

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MAY, 1904.

[Monthly.

LABOURS IN VAIN.

A RECENT visit to the gardens of the Riviera of France leads us to think more than ever of the vanity of attempting in our climate the growth of plants and trees for which it is absolutely unsuited. Yet everywhere we see gardeners protecting plants and trees that can never arrive at their true beauty in our climate. It is too often forgotten that a plant or tree may be alive and quite without beauty of form. What does it avail to see a stunted bit of Olive at the foot of a south wall, or a fragment of Mimosa in a like position, and when one sees the many things admirably grown that a climate like southern France allows to reach fine vigour and beauty, our errors in attempting anything of the kind are more apparent than ever. The growth of the past thirty years has made a wondrous change on the Riviera, where we may see Palms with stems like the pillars of a Greek temple, and Gum-trees well over 100 feet high, with Orange-orchards in full bearing ; Bamboos growing over 30 feet in a season, and all the sub-tropical flora of Australia happy in the open air. Going along the Corniche Road much of this beauty may be seen, the trees often set out in a stiff, hard

way: but it is only when we go up into the hills a little way, where the gardens have a background of native trees and where the woody dell or rock-bound site invites or even compels some thought as to design or grouping, that we feel the wondrous value of the climate for the growth of a noble and varied sub-tropical flora and the absolute error of attempting in any way a like way of grouping in Britain—save where in sheltered dells by the sea like Abbotsbury and Caerhaes we enjoy like advantages. And even where these rare opportunities occur we doubt the wisdom of attempting the tropical. Even in the Riviera it is by no means the most tropical things that give the best effects, but rather where the Olive trees, Heaths, and Heath-like plants of Australia, Roses, Carnations, and sheets of Violets give more familiar and beautiful effects than Palms, however rare, or half the succulent plants of Mexico. There is a real and subtle lien between the land and the plants we may grow in it, and the surest way here as elsewhere to get the best effects would be to give the best places to the trees and plants of the country or of countries similar as to climate.

And this brings us to the lesson for

ourselves in the main, central, and exposed hill regions of our country—those which for their value for good air and picturesque beauty are likely now, and more and more in the future, to be preferred for the home life. It is that we should more than ever turn our thoughts to all things, from tree to rock-flower, that delight in our climate, not merely existing in it but showing us their whole beauty. And it is a large host we have to draw upon, many of them not to be had in every nursery—and whole groups, neglected or forgotten, like the Honey-suckles of which we only see one or two kinds in most gardens. We have to think, too, apart from our own rewards, of the delight and the beauty of the northern and mountain plants to those new-comes to us from favoured winter regions that get burned up in summer. And beauty? Why where can we seek anything higher than that of the trees and flowers of the northern mountains of Europe, Asia, and America—the home and source of all good things for cool countries? More than in any land of Europe and America our country has the great privilege of growing the alpine flowers—the fairest of all. It should be our first care to do well those lovely things that grow so freely with us, owing to our climate being so like that of much of the mountain lands of central Europe. Roses and Lilies, Carnations and Pansies, Water-Lilies and Phlox that in the hot southern regions pass away from the land with the last clouds of early summer—all such are happy with us throughout the summer and far into the autumn, and gardens that do not rely upon the beauty of

these and their many allies are gardens of wasted effort.

That is the best that can be said for the popular way of growing half-hardy plants to put out for a few months in summer as we see in the West-end London parks, and in many costly gardens, both public and private. The assumption in these gardens is that we cannot make flower-gardens without “bedding out” and “mosaic culture” and like attempts to conform a living thing such as a garden to carpet-makers’ ideas in decorating plane surfaces. That assumption is demonstrably wrong and inartistic, the truth being the opposite—that you can never realise the Garden Beautiful with any such aids. * * *

WALL GARDENS.

AMONGST the many lovely scenes offered us by that greatest of artists, Nature, few are finer than those which she creates upon the rocks of the mountain side, and even upon old walls. There is no more beautiful picture than that of an old wall draped with flowers, hung with wild garlands, and for its background the outline of a noble tree. I well remember how, as a lad of ten, I was filled with admiration for those old terrace walls upon the vine-clad slopes which fringe the lakes of Geneva and Neuchâtel, and how much time (in the opinion of my tutors) I was wont to waste among them. To the poetic mind there is a great charm in the sight of these weathered blocks, animated, as it were, by plants and beautified with lichen, leaf, and flower. From the graceful curve of an *Acanthus*-leaf straining against an

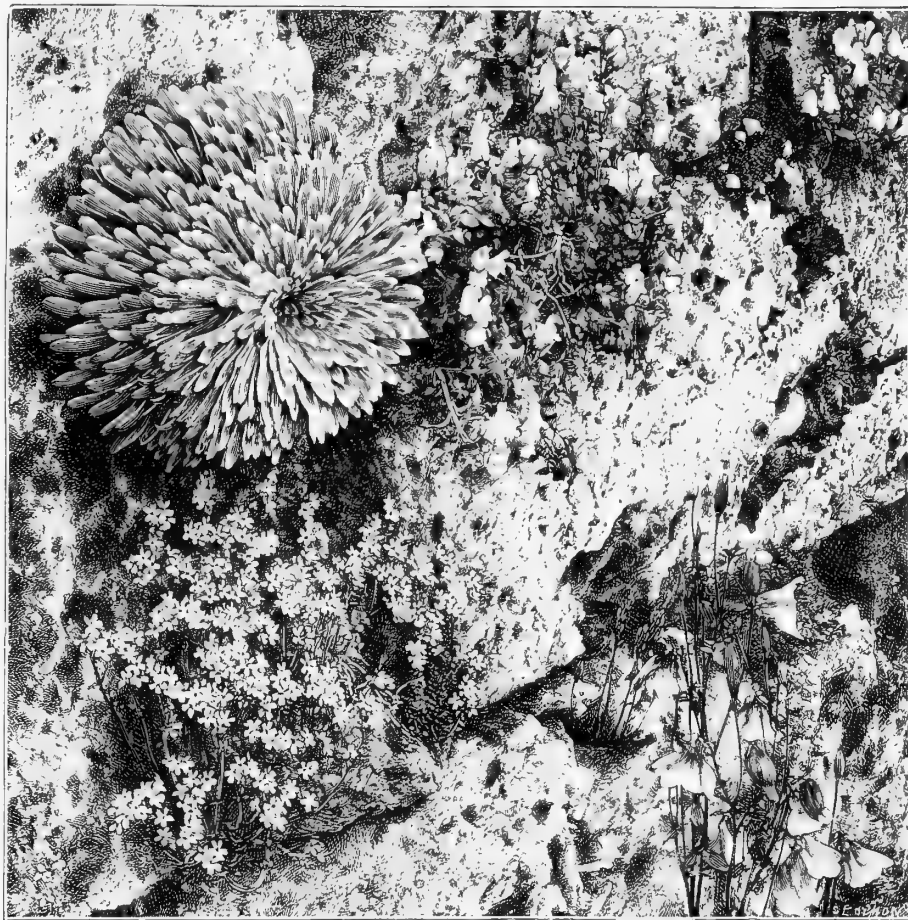
obstacle, and seen by Callimachus the sculptor in a Grecian cemetery, were derived the fine lines of the Corinthian capital; from the interlacing branches of the forest trees the designers of the Gothic arch drew their inspiration. And in like manner the exquisite natural pictures seen upon walls and rocks prompted Edmond Boissier and Baron de Buren-Vaumarcus to the formation of their enchanting wall gardens. Alas, these creations so much admired a generation since have disappeared wholly or in part since the death of their authors, and it only remains to us to profit by their example and their experience in the perpetuation of their work.

A study of Nature and the materials with which she works will show that many of the brightest and most dainty flowers are those growing in clefts of the rock or covering the decay of crumbling walls. The most

delicious of the Cam-

Suitable Plants. panulas and Saxifragas, many of the starry Silenes (*S. pumilio* and *Elizabethæ* among them), the Wild Pinks (*Dianthus callizonus*, *neglectus*, &c.), Ramondia, Jan-
kæa, Haberlea, Primula (most of the varieties), Lychnis, Corydalis, Linaria,

Antirrhinum, Matthiola, Lithospermum, Eritrichium, Androsace, all are wall plants. Add to these the most graceful among ferns, the Woodsias, Cystopteris, Nothochlæna, Asplenium, Scolopendrium, and many dwarf shrubs also, such as *Vella spinosa*, *Rhamnus pumila*, and *Amelanchier*. Thus one sees that the choice of material is large



WALL GARDEN (LIMESTONE), GENEVA. (Engraved for "Flora.")

and that it includes many kinds beautiful in flower. On that marvellous Mediterranean coast the old walls upon every sunny hillside are a treasure-house of bright colour, of sweet perfume and delicate tracery, the very stones seeming to bring forth beauty and animation in obedience to the Spirit of Life.

What the divine artist has lavished upon the world in Nature man is enabled

*How Stones
Irrigate.*

(with certain limitations) to reproduce. Bare hard walls can be clothed with life, colour, and sweetness, if we have but the wit and the patience to use the right materials. It is enough if the wall be sufficiently deep to retain moisture, and porous to allow of the spread of roots. To understand the part played by the stones in these conditions it must be explained that all stone, whether soft or hard, is porous, absorbing moisture by capillary attraction. A rock drinks up moisture as will a sponge or a lump of sugar, until in wet or misty weather its exposed parts become completely saturated. The more porous the stone, the more speedy the process of absorption. Stones also contain a greater or less number of fissures which mineralogists call veins. These are widened by the gradual action of frost and thaw into the heart of the hardest stones, and by their work as channels leading water into the inner cells of the rock their wearing action is great. These channels are more numerous in limestone than in granitic rocks, and this explains why the plant-life of such regions is more rich and varied than upon granite formations. Rocks thus saturated with water are cool reservoirs of moisture which Nature uses for irrigation. How often water may be seen gushing in abundance from the foot of the most desolate and arid of mountains, even though devoid of vegetation, and, in the same way, what are to all appearance the most unpromising of rocks often

show the most dainty and brilliant flora. Roots strike deep into a pile of loosened fragments, or follow the deepest of fissures into the heart of the stone itself, in search of the nourishment hidden there, which is drawn upon for the up-building of the leaves and flowers exposed to the outer air. From the surface of the stone itself also there is given off a constant vapour which, as a protecting veil, envelopes the tender leaves and delicate petals, shielding them from the ardent rays of the sun. It is this influence which enables the fern to unfold its delicate fronds unhurt, though the full heat of the mid-day sun scorches the surface of the rock. But for this natural protection the life of many plants would be endangered by the dryness of the summer atmosphere. The rock's part in Nature is, therefore, to act as a sponge, at one time absorbing the excess of moisture in the air in order to render it again through the agency of rock-plants, whenever a dry atmosphere makes the need felt. This explains the continued existence of many plants which would otherwise perish under the sun's rays. Wall gardens have, therefore, a great interest for all lovers of plant-life, for not only are they picturesque and pleasant to the eye, but they are the means of preserving to us a multitude of fragile mountain plants which would otherwise die of drought, from stagnant moisture, or from the improper exposure and development of their leaves and flowers. When so draped with flowers bare walls may become gardens full of pictures of rich beauty, ever changing in their charm and variety,

and a source of lasting pleasure to the artist—the greatest of all artists, who has thus learned to paint in living colours.

Such a result is within the reach of almost everyone. As already said, all

**To Make a
Wall-Garden.**

that is needed is a wall deep enough to permit the storage of moisture within it. The best of all are retaining or terrace walls, because the soil which they buttress on one side secures a constant and regular moisture. With such a wall one has only to make a cleft where not already existing, and insert the roots of the plant together with a little moss, sphagnum, and rather heavy soil, fixing the whole by means of some rough stone fragments where necessary. For limestone walls care must be taken to select plants that love limestone soils. Often it is enough to sow the seeds of kinds that are easily raised in that way, such as *Eri-nus*, *Linaria alpina*, *Draba*, *Dianthus*, *Helianthemum*, &c. When sown in a compact soil these plants will in a few years give such a wall-garden as to surprise those who do not know how easily such beauty may be called into being. The best aspect for the wall-garden is either east or west, but a north or south wall can be used as there are a certain number of plants that thrive in constant sun or constant shade; still, the greater number of wall plants prefer to face east or west.

In the Jardin alpin d'acclimatation at Geneva we have created a wall-garden

**The Best
Wall Plants for
Sunshine.**

which is the admiration of visitors. It is simply the wall of a greenhouse covered inside and out with rock plants

in great variety and gay with flowers from one year's end to another. Already in February we have the flowers of *Saxifraga Burseriana* and *oppositifolia*, *Draba aizoides* and *Androsace Laggeri*, and in December we had clusters of *Antirrhinum glutinosum*. The plants which do best on the sunny side of the wall are



WALL GARDEN (SANDSTONE), SUSSEX.
(Photographed in the first year of its formation.)

the *Acantholimon* in variety and all the *Æthionemas*, with *Alyssum alpestre*, *montanum*, *pyrenaicum*, *repens*, *speciosum*, *saxatile*, *spinosum*, and *Wulfenianum*; also *Androsace arachnoidea*, *Lag-geri*, *lanuginosa*, *sempervivoides*, *villosa*, *ciliata*, *Helvetica*, and *vitaliana*, and *Antirrhinums* of all kinds, but especially

the fine *A. glutinosum* from the mountains of Spain, flowering with a long season and very freely. Then follows the whole group of *Arabis* and nearly all the *Arenarias*, with *Aster alpinus*, the complete list of *Aubretias*, and all the rock-loving *Campanulas*, of which *macrorrhiza*, *elatines*, *elatinoides*, *Raineri*, *excisa*, *garganica*, *muralis*, *cæspitosa*, *pusilla*, *petræa*, and *Cenisia* are the best. All the *Cerastiums* are useful, and the free-growing *Corydalis lutea* with its paler relative *ochroleuca*. Most of the *Dianthus* and all the *Drabas*, the *Edraianthus*, and the *Erinus* may also be included in the list, with the pretty little Fairy Forget-me-not (*Eritrichium nanum*), which cannot be kept alive in any other way. Several of the *Erodiums* will serve, and amongst the *Erysimums* such kinds as *pumilum*, *pulchellum*, *purpureum*, *Kotschyannum* and *Wittmanni*. The Edelweiss (*Leontopodium alpinum*) does well in such crevices, as do also *Gypsophila repens* and most of the Rock-roses (*Helianthemums*), for which, however, a certain depth of soil is necessary. Add also *Hypericum coris* and *reptans*, and all the *Iberis* and *Linarias*, with *Lithospermum petræum* and *olæfolium*, *Lychnis Lagasæ* among the Campions, and *Micromeria rupestris*, the *Moehringias*, and *Omphalodes Luciliæ* and *lusitanica*. The Alpine Poppy (*Papaver alpinum*) will flower in its season, with *Phyteumas comosum* and *humile*, and of the Cinquefoils, *Potentillas alpestris*, *caulescens*, *rupestris*, and *tridentata*. All the *Primulas* of the groups *auricula* and *viscosa* may be relied upon for colour in spring, and of the Soapworts, *Saponaria cæspi-*

tosa, *lutea*, *pulvinaris*, and that brilliant little trailer *ocymoides*. The *Saxifragas* of the *Aizoon* and *Kabschya* groups, such as *longifolia*, *cotyledon*, *aretoides*, *cæsia*, and *media*, yield a rich variety of form. *Sedums* and *Sempervivums* will grow in the driest nooks, and most of the *Silenes* and *Teucriums*, the shrubby *Vella pseudo-citisus* and *spinosa*, and *Veronicas Allienii*, *cæspitosa*, *canescens*, *fruticulosa*, *orientalis*, *saxatillis*, and *spicata*, with *Viola cenisia*, completes a list which only serves to give an idea of the wealth of material to hand.

For the north or shaded side of our wall should be used ferns, but not

Plants for Shade.	<i>Ceterach</i> , <i>Nothochlæna</i> , <i>Woodsia</i> , or <i>Cheilanthes</i> , which do best upon the sunny side. Of flowering plants there are <i>Ramondia</i> , <i>Haberlea</i> , <i>Chrysosplenium</i> , <i>Saxifraga Huetti</i> and <i>cymbalaria</i> , <i>Wulfenia</i> , and <i>Primula capitata</i> . I mention in this list only those kinds that have done well on our own wall, and for English gardens especially it might be lengthened by including many plants of difficult culture in a moist climate, un- less kept from excessive wet by a place in such a wall-garden as I have described.
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H. CORREVON.

Floraine, Geneva.

WILD FLOWERS.—“He who has taken lessons from Nature, who has observed how the flowers flush forth from the brightness of the earth’s being, as the melody rises up from the moved strings of an instrument; how the quick fire of their life and their delight glows along the green banks, where the dew falls the thickest and the low mists of incense pass slowly through the twilight of the leaves; he who has watched this will never take away the beauty of their being to mix into meretricious glare or to feed into an existence of disease.”—J. RUSKIN.

THE MEXICAN ORANGE-FLOWER (*Choisya ternata*).

THOUGH the Salvias, Dahlias, Cluster Flowers, and similar plants of Mexico are common enough in our summer borders, there are few indeed of Mexican plants that one may risk in the open the year round. This beautiful shrub is an exception. Everywhere throughout the south, and in the warmer parts of the midland counties, it succeeds as a wall shrub, growing and flowering freely in all save the coldest seasons.

In Cornwall, Devon, and other parts of the south coast, it may be seen as a bush or forming thick hedges beautiful in leaf and flower; at Kew a group of bushes near the lake is nearly as much at home and but seldom touched by frost; while inland districts as far north as Stourbridge and York can show plants thriving in the open upon sheltered walls.

Grown in this way *Choisya*s endured weeks of frost in the terrible winter of 1880-81, coming through with very little real damage, and in sharp spells since then have stood 17 degrees of frost quite unharmed, while near at hand the Hairy Viburnum (*V. plicatum*), Laurels, Hydrangeas, Ivies, Aucubas, and the Sweet Bay, have suffered severely. While, therefore, the *Choisya* cannot claim to be perfectly hardy, under favourable conditions it is fully as much so as many shrubs far less beautiful that are planted without hesitation in gardens.

As a Wall Plant.—This beautiful evergreen does best when trained against a sunny wall facing south or south-west, but will do well even in colder aspects if protected from

frost and cold winds. It should be planted in light rich soil, raised somewhat above the general level if the subsoil is cold and heavy. A mixture of peat, loam, sand, and charcoal is often recommended, but it does well enough without such preparation where the soil is good and light. So placed it spreads fast, easily reaching a height of 8 or 10 feet, covering a wide space with its dark green leaves, and bearing in profusion its white clusters of flowers, like those of the Orange (to which it is nearly allied) but clustered differently, and sweet with



CUT SPRAYS OF THE MEXICAN ORANGE-FLOWER.

a strong fragrance as of Hawthorn. Growing as either a bush or as a wall plant it is vigorous and well formed, renewing freely by new shoots from the base as old stems decay or are injured by frost. A member of the Rue family, to some the smell of its leaves is unpleasant, but it is not even noticeable unless the foliage is bruised. In warm southern gardens the plant often begins to flower early in the winter but comes into full beauty during April and May, when the flowers cover the plant, lasting for several weeks. A second crop of flowers often appears in August and September, while in some seasons the plant is almost constantly in bloom. It forms a beautiful companion to such a shrub as the large-flowered Escallonia (*E. macrantha*), the

handsome foliage and fine flowers of red and white contrasting and mingling very prettily.

Culture under Glass.—In northern gardens or bleak exposed districts it is a good plant for the conservatory, easily grown and brought into flower with very little heat; in fact, it will thrive and blossom perfectly in a house giving bare protection from frost. In pots its habit is not so good as when the roots are free, the *binding* allowed for the sake of forcing flower often inducing a meagre appearance; but young plants may be kept in order by cutting back after flowering. It is quite at home on the back wall of a sunny house, but when planted under glass the soil should not be too rich or growth becomes rank and flowers few. Red-spider is its one foe when in the greenhouse, and syringing is needed to keep clear of this pest in warm weather. Few plants are more easily increased either from layers, from cuttings of the spring growths rooted in gentle heat, or slips of the half-ripened shoots put in sandy soil under a handlight in early autumn; suckers, already rooted, are often pushed from the base and are readily detached.

In other Lands.—The *Choisya* is commoner upon the continent than with us, being much grown for its early flowers under glass, which are also in demand as a cheap substitute for Orange flowers at marriages. In the south of France the plant grows with great rapidity into bushes of a naturally rounded form and 6 or 8 feet high when full grown. Upon such strong shrubs the size of the clusters is very large, often reaching nearly a foot round, with the stout branches bending under their weight, while upon the warm, calm evenings of late spring one may detect their fragrance at a distance of many yards. In its native country the *Choisya* is a shrub of the uplands and the mountain valleys, where it mingles with the Cluster Flower (*Cestrum*) in rich profusion in moist half-shaded dells. B.

INULA GLANDULOSA, var. *fimbriata*.—In the list of *Inulas* given in Vol. I. of *FLORA* (pp. 310-312) I do not find this new variety mentioned. Raised by Mr. Beckett, gardener to Lord Aldenham, this kind has the ray-florets divided and fringed, while it is stated to show a better habit of growth combined with greater freedom in flower.—G. C. LEMAN.

NEW FORMS OF JUNO IRIS.*

THE Juno group of *Iris*, with its easy culture and readiness to seed, offers a wide field to the hybridiser, who, in addition to the older kinds, can make use of the more recent introductions in this class, such as *bucharica*, *warleyensis*, *Willmotiana*, and others. With such material to hand it is to be expected that many handsome forms will make their appearance either as natural hybrids or as the result of studied crossing.

The subjects of the accompanying plate, *Iris sind-pers* and *Iris purpureo-persica*, are two among many other hybrids which have not yet flowered. As their names imply, they are intermediate between *Iris sindjarensis* and *persica-purpurea* as seed parents, and the old well-known *I. persica* as pollen bearer. The first cross, *I. sind-pers* (No. 1 on the plate), was effected some years ago with the hope of improving *I. persica*, which in our Haarlem soil, in general so well suited to this class of *Iris*, is always more or less weak as compared with other free-flowering kinds.

By the influence of the robust *I. sindjarensis* the new gain has developed into a very strong-growing plant, noticeably dwarfer and more spreading. It shows a striking combination of the character of its parents; its foliage is of a deep glaucous green, but narrower than *I. sindjarensis* and distinctly falcate. In the delicate porcelain-blue flowers the influence of *persica* is noticeable in the blackish tinged lips and the conspicuous golden-orange crest which are both absent in the other parent. The size of the flowers, of which five to seven are open

* With coloured plate from a drawing by H. G. Moon at Warley Place.



I IRIS SINDJAR PERSICA L. I PURPUREO PERSICA.

at the same time, is about the mean of the two species.

The second flower, *Iris purpureo-persica*, the result of crossing *persica-purpurea* with *persica*, is a very remarkable and beautiful hybrid. In general appearance it is not unlike its seed parent (*persica-purpurea*) and is best described as a large and improved form of it. Its leaves are very stiff, of greyish green, very falcate, and only fully developed after the flowers have faded. These are of large size, being over 4 inches across and of great substance; their colour is a uniform ruby-red, remarkable at all times, but particularly rich and glowing when seen with subdued sunlight falling through the petals, either in the early morning or towards sunset. At such a moment a colony of this *Iris* presents a lovely and striking appearance. On the falls the general colouring deepens into blackish maroon, relieved by the bright orange crest inherited from *persica*. From it also it has its lovely sweet violet-like smell, so pleasing upon the sunny days of early spring.

Both hybrids are of proved hardiness; in some English gardens as well as in my own nurseries a few plants that had formed big clumps were not lifted and came unharmed through the really arctic winter of 1902-1903, flowering just as freely as ever, though in no way protected. This fact, together with the profusion and substance of their flowers and their bright colouring, is merit sufficient to ensure them a welcome to our spring bulb-gardens.

C. G. VAN TUBERGEN, JUN.

Haarlem.

THE GREATER TREES OF THE NORTHERN FOREST.—No. 14.

THE ASH (*Fraxinus excelsior*).

FOR its high economic value in manufactures, beauty of form, and splendid endurance in northern regions, this is one of the most precious of trees. I have seen many an old Ash about farm-houses as fine in its winter form as any tree could be; it is noble in height, too, when grown in high woods or massed in good conditions. It is also an excellent wood to burn and the only one the branchlets of which will cheerfully cook your breakfast in the open air the same morning as you cut it down.

The Ash grows under very varied conditions, and is most frequently met with on the low plains and in broad river-valleys, or smaller valleys where the soil is cool; under these conditions it attains its greatest size and best value. In no part of England is the Ash considered as so tough and good in quality as in the Wealden district of Sussex, Surrey, and Kent. In other counties where the tree grows more vigorously and rapidly, the quality of the wood is not nearly so good. Cobbett, in the "Woodlands," notices the storm-resisting qualities of the Ash in his clear way, saying, "it fears not the winds. By that I do not mean the power which the winds have of bringing it down, though it is pretty stout in that respect and does not come trembling about like an Elm before every south-western puff. I mean that sort of power which the winds have of checking the growth of trees, and especially those winds near the sea-coasts. On the Hampshire coast the

wind that comes from the Atlantic is, of course, a south-west wind. You will see the Oaks, when exposed to this wind, sheared up on the south-west side of them as completely as if shaven with a pair of shears. The head of the tree resembles the top of a broad quickset hedge, which is kept sheared up in a sloping form on one side only . . . and at the same time the everlasting flinching of the tree and the continuance of the weight on one side, while it is kept shaven on the other, makes the trunk of the tree lean away from the south-west. Close by the side of an Oak like this you will see an Ash of equal size and height standing as upright as if in the most sheltered valleys, and I have looked with the most scrutinizing eye without ever having been able to discover that any of the shoots pointing to the south-west had received the smallest injury." The rotations that suit the Ash are those of 70 to 90 years. Often planted as a wood by itself, it is still oftener planted with Oak, Elm, and sometimes also with Hornbeam and Sycamore.

Wood.—The wood of the Ash is very elastic, and a post made of it will bear a greater strain than the wood of any other tree. Its value is enhanced by the rapidity of its growth, and, as in the case of the Sweet Chestnut, the wood of young trees is more valuable than when mature. Its texture is compact and porous, and where the growth has been free the compact part of the annual layers is greater than the porous, and the timber tougher as well as more elastic and durable. Less rigid and lasting than the Oak, it is tougher than that

of any other forest timber, and hence its universal use in all those parts of implements which are liable to sudden shock, such as the circumference, teeth, and spokes of wheels, beams of ploughs, and for many agricultural implements. It is good for kitchen tables, scouring better than any other wood and being less liable to splinter. Milk pails are made of thin boards of Ash sawn lengthwise out of the tree and rolled into a hollow cylinder to be fitted with a bottom. The roots and the knotty parts of the stem are valued by cabinet makers for the sake of the curious dark veining, which gives a peculiar effect when polished. Though susceptible of a high polish and not often liable to become warped or worm-eaten, it is not satisfactory for the making of large furniture, the wood cracking in the dry hot air of houses. As fuel it is excellent, burning even when newly cut, giving out very little smoke, and the best of woods for smoke-drying fish. It is excellent for oars, blocks, and pulleys, and is much used by boat-builders. Few trees become useful so soon, it being fit for walking-sticks at four or five years' growth, and for spade-handles and other implements at nine or ten years. It is used largely for hop-poles, hoops, crates, basket-handles, rods for forming bowers or training plants, and for making light hurdles and wattled fences. For poles, the under-woods are cut over every twelve or fourteen years, according to the nature of the soil; for other uses they are cut at from five to seven years. The best time to cut Ash is from November to February, as if cut when the



GROUP OF ASH, MILL PLACE, UPPER MEDWAY VALLEY, SUSSEX.
(Engraved for "Flora" from a photograph.)

sap is up it becomes more brittle and liable to discolour. Ash poles for hoops should be packed close in heaps and covered with earth during April and May to ward off the attacks of insects.

Increase.—In forest nurseries no tree is to be had more readily in quantity and in a good state for planting, but in places infested by rabbits it is often difficult to establish, little trees being bitten hard and either destroyed outright or reduced to a leprous state. There is only one tree rabbits like better than the Ash, and that is the Rowan. Sometimes in planting fields of Pine I have found that the seeds of Ash have blown from the neighbouring coppices and I got more Ash than Pines. If taken up in good time these seedlings come in very handy for planting. Seed is cheap and sound sent from good houses. I often scatter some out of hand in recently-planted woods upon cool soil, Ash being essential in mixed woods. In planting young trees those of one to two years are best, and in pure woods, rather close planting is best, allowing for loss through ground game; 4 feet apart is not too close. In this way the trees draw well up and thinning is easy, while the thinnings are useful at all ages; close planting need therefore be in no way against the trees having full room to grow. In the plains and upon the hillsides the Ash seeds with fair regularity each year, but after heavy seeding many trees will take a year's rest. On the mountains seeding is more intermittent, a heavy crop being followed by years during which there are no seeds. Gathered in autumn and sown at once, part of the seed may start

in the following spring, but in most cases germination takes place eighteen months from the sowing. If sown in the spring the seed germinates during summer. The elaborate instructions given in books for raising Ash from seed are of little use to planters, as the tree is so abundantly produced in forest nurseries and, as I think, so freely raised from seed by merely scattering it about, or even sowing itself in many cases. Though male and female flowers mostly occur on the same tree, they are sometimes found apart; those bearing only male flowers carry no seed, but their growth is finer and foliage more abundant where beauty of form is sought.

Range.—The Ash is widely spread in Europe, reaching as far north as Scotland and passing thence in a descending curve through Norway, and southern Finland, to the neighbourhood of St. Petersburg; from this point its area turns sharply southward to Moscow, stretching further east to the Russian frontier but not passing the Ural mountains. From thence it spreads southwards to the Caucasus, being common in the mountains of that region. Its southern limit crosses the Carpathians in Dalmatia, descends towards the Mediterranean as far as the centre of Italy, and reaches the Atlantic in the north of Spain. In the north of Africa and upon the European shores of the Mediterranean it is found only in its dwarfer and distinct form, *F. exelsior australis*. Its limit of altitude varies from 1,000 feet in Britain to 2,500 feet in the Carpathians, and from 4,000 to 4,500 feet in the Alps.

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JAPANESE GARDENS AND
FLOWER ARRANGEMENTS.

WE have lately seen a good deal of the Japanese plants for vases, pots, &c., the best of which are said to be very old. Occasionally the potted trees are beautiful in form, especially when, as with Cypress and Pines, the thing so treated does not become a mere distortion. Gardening, like almost every other human pursuit, is subject to variations of fashion not always to its profit, and we cannot say that this recent movement in Japanese ways is likely to be a gain. On the contrary, it sets us thinking in wrong ways, and wrong thinking often leads to wrong acting. One or two examples of Japanese gardens lately made in London, such as those at Holland House, are anything but likely to stimulate our devotion to the Japanese ideas of a garden. Few of us can say how far these show the real thing, and we doubt if they do show it at all fairly; plants in pots we see too often, and we lately passed through a large collection of them, not six out of a score being worth looking at. Many of them were mere nursery wastrels such as would be thrown away in our own nurseries; a good nurseryman would not have let them go out of his place, knowing that they could do him no good. Even the best of these pot-plants would seem like the work of a little town-imprisoned people with no ground to grow things in their natural form.

But when we come to the Japanese way of arranging flowers it is a different matter altogether. There they undoubtedly have beautiful ideas and the

art of arranging their favourite plants and flowers to get their full effect. They talk of these as "styles" and make a profession of teaching them, but there is really not much (at least to a Western mind) in their fine-drawn distinctions. The real lesson to be learned is that we should go to Nature herself. You cannot beat the toss of the double Cherry-branch hanging in the free air, and the Japanese get as near to that as they can. We cannot surpass in grace or beauty the port of the Iris-flower and its leaves. But take the best flowers and jam them together in the form of our approved "nosegays" and we get another and a very bad result.

There is a good deal of very curious and subtle writing about these Japanese effects in a list published by one of their flower-artists, parts of which read as follows:—"Several styles are practised—as the Koriu, the Enshiu, the Misho, and the Ikenobo—and in each of these are various schools, each with its own interpretation of the universal rules, and each with its own manipulation. And among all of them curious traditional meanings are attached to the parts that go to make a flower-composition. Thus, in the formula of Tenchi-jin, the three main stems stand for the heavens, earth, and mankind. A tall, almost upright leaf or stem will represent Ten, the sky; a lower leaf carried in a sweep almost horizontally is Chi, the earth; while a third, on the opposite side and higher than Chi, though lower than Ten, is Jin, the people of the world." But none of these formulæ are allowed to disturb in any way the attainment of

pure beauty in the result. Indeed, they act rather in the manner of mnemonics, keeping the laws of the art before the eyes of the pupil.

But when one looks from words to things the Japanese way lies mainly in recognising the beauty and importance of form, and of showing the whole beauty of the plant, instead of jamming flowers into "nosegays" in shape like a Cauliflower—a rooted habit in England. It leads the excellent rose-growers of London to send their flowers to the market with the heads cut close off and without a bit of stem, so that one cannot place a Rose in any natural way if we depend upon such supplies. In Paris and America, Roses are sent to market with long vigorous stems, and there need not be the slightest difficulty in cutting them here in like ways. In our country the beauty of the whole plant is not thought of but the flowering part alone; the Japanese method is the opposite and true way. The commonest things, such as a spray of Larch, a stem of Solomon's Seal, or a tuft of Iris, are arranged so as to show the whole beauty and form of the plant, leaf, bud, and flower. This is a very important lesson to learn, though as we see the Japanese arrangements done in London it occurs to us that the same results could be obtained in a simpler way than that of the Japanese. They, in working in their beautiful bronze vases, take an amount of pains not always justified by the result; the more so as in our country we can have a greater variety of vessels, many so shaped as to receive a flower at once and to show its beauty completely.

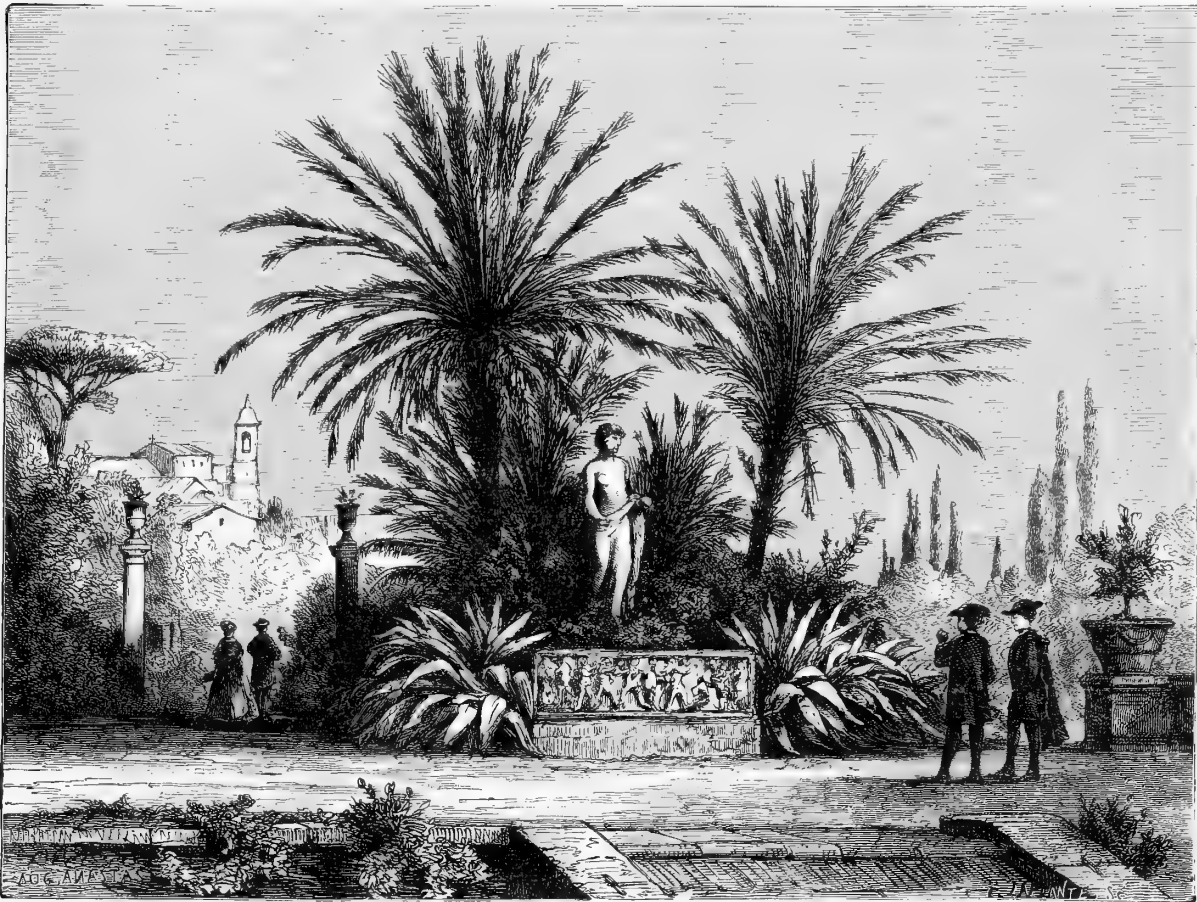
Some of the Japanese skill arises from the need of adapting flowers to their bronze vases.

One of these Japanese artists in flowers looking at some of our pictures by Mr. Moon at once said, "Why, these are our ways of arranging flowers," simply because of the fact that the artist had chosen a very few simple things and shown them in their full beauty. The Japanese attach, and rightly, great importance to form. Their difficulties of getting plants in this country to show this phase of their art are serious, because in our markets all the flowers are cut in quite a different way, and much less attention is given to form, whether of the foliage of flowering plants, often very fine, and Reeds, Grasses, Bamboos, and tree-shoots.

NEW KINDS OF CYCLAMEN.—The active search for new bulbous plants within recent years has had the result of bringing to light several new species of Cyclamen, three of which belong to Asia Minor and two to Greece. Their detailed descriptions appeared in a recent issue of *Gartenflora*, to which we are indebted for the following notes:—*Cyclamen libanoticum*, the first of these new kinds has already been introduced to gardens, and was figured in our issue of September last. *C. pseudoibericum*, discovered in the mountains around Smyrna, has been introduced by M. Van Tubergen, and is nearly related to *C. ibericum*, but larger in flower. *C. Mindleri* is a little known species, discovered by the botanist Heldreich, and belongs to the same group as the last, but is remarkable for four black glands carried upon the edges of the lobes of the corolla. *C. Meliarskisi*, also due to the researches of M. Heldreich in the mountains of Greece, is akin to *C. græcum*, but differing in the silvery whiteness of the centre of the leaf. And lastly, *C. hiemale*, a new kind found by M. Siehe in Asia Minor, is said to flower in winter and is about intermediate between *Cs. ibericum* and *coulm.*

ITALIAN GARDENS.—There are few more apt examples of the distinction between reality and poor imitation than that of the true Italian garden with its variety of form and life, its light and shade, its pergolas and trees in their abandoned grace, and the stiff and hard plateau often called an “Italian” garden in Britain. The modern Italian garden,

gardens to any one style, either of design or planting, is against us in all ways. The Villa Albani was celebrated for its relics of antique statuary, among which are several well-known masterpieces of antiquity. It was laid out with its treasures of statuary, and adorned by Cardinal Alessandro Albani, whose diletanteism found a congenial outlet in the



ITALIAN GARDENS, VILLA ALBANI.

like our own, is infested with mosaiculture, often in its worst phase, but that was never seen in the old Italian garden—it is, indeed, a “decorative” invention of our own inartistic days. So in connection with this we may give a few engravings of real Italian gardens: these may serve to show that it is in variety not in conformity that we must seek beauty, and that all attempts to conform

decoration of the gardens of his noble suburban residence with the rarest objects of antique art. The accomplished Cardinal also distinguished himself diplomatically during his embassy to the Emperor of Germany and as a biographer. He sought to realise a kind of Ciceronian elegance in his abode and its surroundings, desiring to emulate, as he added feature after feature of classic

elegance to his gardens and to his house, what he conceived to be an embodied reproduction of the Villa of Hadrian, of Cicero's retreat at Tusculum, and the charming country abode of which Pliny has left us so many interesting particulars. The ancient sarcophagi of this old Roman garden, wrought about with alto-relievi, flanked by great clumps of Agaves growing with tropical luxuriance—its antique statues telling against masses of evergreen foliage—its Cypressess shooting lovely forms into the blue Italian sky, contrasted with the flat-topped Stone Pines, all these remove it far from the common type of Italian garden as known in our land.

A BEAUTIFUL EVERGREEN COVERT PLANT.—We often see lists given in catalogues of covert-plants like Privets, which are only of slight beauty and value, and inferior to our native Briers, Bracken, and Furze for covert. There is one bush, however, not always known as a native be it said, which makes the most beautiful of all evergreen covert, especially in sandy, chalky, stoney, or dry gravelly soils, on which few other things will thrive. The Box is common in shrubberies but rarely in its natural form of a spreading plummy bush, as on an open sunny hillside. Nothing we know of is more beautiful than a colony of Box fully exposed, as there it has a beauty never seen in gardens or shrubberies. A great quality, and one which removes it entirely in value from the Laurels and other evergreens commonly used, is that the rabbits do not touch it, owing to some poisonous property. In the last two years, in the hope of getting some evergreen

covert I tried the hardest form of the Cherry Laurel, and also (a great favourite of mine) the true Laurel or Sweet Bay. Though accustomed to the depredations of the rabbit, I never saw anything so sad as the disappearance of both, many plants being absolutely bitten to the ground, whilst in the same woods Box of small and of all sizes is untouched. For shelter, pleasant colour, hardiness, and for being proof against vermin, it should take the first place among evergreen covert plants, and there is a vast range of our country in which it grows well. It dislikes a compact soil, but, even where such soils abound, it is often possible to find patches of gravel or sandy soil in which it will thrive. The Box is at home on arid soils and on hillsides and mountain slopes. Large tracts of forest are covered by it in southern and western France and other parts of southern Europe, northern Africa, and northern and western Asia. It is also found in some of our southern and western counties—Kent, Surrey, Sussex, and Gloucester. It is a long-lived shrub, and slow of growth; as it is, it will, in the best conditions, rise to a height of 20 feet or over, and in some specimens as much as 6 feet round the stem. But grand specimens like these are the exception, and most often the Box is seen as a compact shrub. It is easy to establish or move at any age, but for covert use is best bought small, in which state it can be had very cheaply. It seeds freely in our country and on arid slopes might be increased by scattering the seed on the surface. To many people the odour of Box is very agreeable and its colour also is beautiful.

AZURES AND THEIR EFFECT
IN THE GARDEN.

IT was at one time commonly thought, and indeed is now, that good blue plants are rare; but on the contrary we have of late years become rich in them, though they are very seldom used with good effect. The Snow Glories (*Chionodoxa*) are a wealth of beauty in themselves and everyone must admire them singly, no matter how few in number; but few yet know the beautiful result that may be got by massing them in pretty ways as belts or carpets. Some of the best of them grow more freely than any of the older flowers we had. Their colours are the finest and the most delicate ever seen, whether cut for the house, or, better still, in the open as masses of the finest colour. There are several distinct species of them as well as the varieties which are being raised. The effects we might look for from some of these plants may be well considered in relation to those we see given by the Wild Hyacinth (*Scilla nutans*) in our woods. There is hardly one of them but will give effects as distinct and beautiful, while quite different in colour, if rightly used. Even such a fine old plant as the Siberian Scilla is not often grown in effective ways, wonderful as it is when rightly used. The Grape Hyacinths (*Muscari*), which are full of lovely colour, give no effect if grown in small patches. Among the many poor colours in the common Hyacinth of our gardens, one occasionally sees good blooms like *Charles Dickens*, and, being thoroughly hardy plants, they would tell in the same fine way. The Wild Hyacinth, from which these

plants have come, is also pretty in colour. The Anemones, which always give fine colour but not much blue, have of late years become rich in blues, as the various lovely forms of the Greek Anemone prove. What these fine forms may be in effect we have yet to realise, but there need not be the slightest doubt about it as soon as the plants are grown sufficiently. They give us a wealth and endurance of colour far beyond that of the always charming Apennine Anemone. Good as that is it lasts but a short time, whereas these Greek Anemones struggle on through the spring until the pale blue Wood Anemone (*A. nemorosa*) comes with its delicate colour. The best of all is the common Wild Blue kind (*A. Robinsoni*) the effect of which in masses charms the least observant. It is from that point of view the most precious of all, and perhaps the most neglected. The colour is true and good, the blue constant, and the plant not difficult. All lovers of early flowers delight in the Hepatica, which is one of the most beautiful flowers in our gardens, lovely in its every form, even as a tuft in a cottage garden. But one may wander half a lifetime among gardens and never see them well used. Another beautiful plant is the Transylvanian Windflower (*Hepatica angulosa*), which may be grown in the same way for its good colour. At one time we had little help from the ordinary Primroses in this direction, but now we have a race of beautiful blue Primroses often very fine in colour and readily raised from seed. The colours vary prettily when so used, and if they do not give such bold effects as some of

the purer and brighter azures, they are charming in near foregrounds. Nor must we forget the little creeping Periwinkle (*Vinca minor*), the fine effect of which when well massed has been recently dwelt upon in our columns. It is useful as an evergreen carpet for bulbs and other plants and of fine colour during its season of bloom.

Where soils are suitable and people are patient, many of these plants may be readily increased and some come freely from seed, but the trade might help more to the attainment of beauty in gardens by offering them more generously in quantity in their catalogues. All who know anything about such things know that they are very easily grown, and, offered in quantity by the wholesale houses, the public ought to get the benefit of this and so be able to realise their wondrous beauty without much loss of time.

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THE NIGHT-BLOOMING WATER LILIES.

VARIOUS forms of tropical Water Lilies, such as the Blue Water Lily (*Nymphæa zanzibariensis*) and its splendid varieties, are now known in cultivation, but the section of night-blooming kinds is little known in European gardens, save the very few where some space is given to tender water-plants. In America they are better known, and growers have raised crosses and varieties, of which the flower shown life-size in our engraving is one of the noblest.

N. George Huster is a variety of *N. rubra*, sent out some years ago by Dreer, of Philadelphia, as an improved *N. O'Marana*. It is a fine flower of rich

deep crimson, variously shaded with purple sheen, and exceedingly vigorous and free. Its bold leaves of bronze-green, spread in a broad, floating tuft of many feet, with massive flowers borne upon stout stems some 12 or 14 inches above the water, remaining in beauty for three or four days after opening. Though usually expanding towards night, and closing early in the forenoon, it is easy to enjoy this noble flower while in perfection, for when cut the petals remain open throughout the day, lasting longer, indeed, than if left upon the plant. Also, when the weather is overcast the flowers remain open, so that it is not necessary to sit up half the night to see the plant at its best.

Culture.—The cultivation of these night-flowering kinds is the same as for other *Nymphæas*; that is to say, a bed of 9 inches of soil and an equal depth of water, in shallow tanks heated to about 70 or 80 degrees, but with means of free ventilation at either side. No manure is given at Gunnersbury to any of the Water Lilies there, experience showing that with plants of such naturally strong growth it tends rather to coarseness and leaf-spot than to good results. Seed of this kind is offered by several of the leading American houses, so it would appear to come fairly true when so raised.

Other Kinds.—The night-flowering Water Lilies are divided into two groups. The first are Old World kinds, found in the south of Europe, Asia, and tropical Africa; the second, of which few are in cultivation and many hardly known, are plants from tropical America. To the first group belong all the



A CRIMSON NIGHT-BLOOMING WATER LILY. (Engraved for "Flora.")

garden varieties raised of late years and recently classified as follows:—

THE WHITE LOTUS (*Nymphaea Lotus*).—The well-known plant held sacred by the ancient Egyptians, celebrated in poetry and romance from the earliest ages, and common in warm countries. It has rounded leaves of dark glossy green, often measuring 20 inches across, with large white flowers suffused with light pink on the broad outer petals, with a central cluster of many yellow stamens. The flowers open in the evening and close in the forenoon of the following day. There are two natural forms of this: *dentata*, the largest and best of white night-flowering Lilies, with flowers of 8 to 12 inches, opening very flat and remaining open till much later in the day; the petals are narrower and the dark green leaves deeply toothed. Central and western Africa. The second form, *pubescens*, is a native of India, with leaves hairy beneath and flowers tinged with pink.

Varieties.—Being free of seed and readily crossed, there are several garden varieties of *N. Lotus* and its forms, the best of which are: *Jubilee*, with petals of glistening white save a slight pink flush at the base, and 6 or 8 inches across; leaves blotched with brown and crumpled towards their margin. *Smithiana*, a cross between the White Lotus and its form *dentata*, with broad petals a little deeper in colour, showy yellow stamens, and leaves quite flat. *Delicatissima*, a cross between *dentata* and *N. rubra* and nearest the first in character, with flowers of light pink and leaves slightly crumpled. *Deaniana*, a vigorous hybrid of the same parents but more distinct and of a deeper rose-pink, with broad petals and red stamens; leaves bronze-green and much crumpled. *Lælia*, a plant of mixed origin, with flowers white or nearly so, and leaves of bright fresh green; *Lælia colorans*, smaller flowers shaded with pink. *Eastonensis*, also a cross between hybrids, has white flowers and dark, bronzed foliage.

CRIMSON LOTUS (*N. rubra*).—This Indian kind is only distinguished from the var. *pubescens* of *N. Lotus* by its flowers of deep purplish red, 8 to 10 inches wide, with brownish-red stamens, and by its never opening out quite flat. The two kinds run together in colour, and are perhaps only forms of one species.

Varieties.—The garden varieties of *N. rubra* are also numerous and differ so far as to be grouped into several classes, but for garden purposes the distinction is unnecessary. *Columbiana*, a chance seedling raised about ten years ago, with deep red flowers of medium size, and dark bronzy-red foliage. *Diana*, a cross between plants of the two great eastern and western groups, with flowers of bright magenta-crimson and leaves of deep olive-brown; *Diana grandiflora* is larger and of deeper crimson. *Devoniensis*, an English cross between *Ns. Lotus* and *rubra* and the first hybrid raised, is perhaps the kind best known in gardens. Large flowers of pure red, opening from 8 p.m. to 1 p.m. next day, and big flat leaves, hairy beneath; raised at Chatsworth in 1851. *Boucheana*, a plant of the same parentage but a shade lighter in colour. A third kind, *Ortgesiano rubra*, with dark red flowers, is almost indistinguishable from *Devoniensis*. *Frank Trelease* is also very similar in form, with rich dark crimson flowers and smaller leaves of deep bronze-red colour. *O'Marana*, coming from *N. Lotus* crossed with a hybrid, bears leaves of bronze-green with margins irregularly crumpled, and pinkish-red flowers of large size with a pale streak up the centre of each petal and orange-coloured stamens; free and robust. The variety *George Huster* approaches this and is often described as an improved form. *Arnoldiana*, though similar, is much smaller, with leaves and petals crumpled, having as parents *Ns. dentata* and *rubra*. *Niobe*, a cross of uncertain origin, bears flowers of bright carmine with leaves waved and toothed at the edge. A rare hybrid, said to have disappeared from British gardens at least, is *N. Kewensis*, coming from *dentata* and *Devoniensis*, with light pink flowers and bronzed foliage. A chance seedling of *Devoniensis* gave *N. Sturtevantii*, a plant with broad, much crumpled leaves of light bronze-green, and large very double flowers of pink, shading to red, broad in petal, with stamens of orange-brown. A massive flower of great beauty, varying much in shade of leaf and flower, which should be started early and richly fed; *Rubicunda*, a cross between this and *N. Lotus*, bears smaller flowers of deep pink.

Of the second or American group of night-flowering Water Lilies little is known, but their garden value is probably not great. The best

known kinds are *Amazonum*, *blanda*, and *Rudgeana*, but of these perhaps only the first is in cultivation. The flowers of *Amazonum* are not large and are never completely open, opening a little way for a few hours on the first night and partially re-opening on the evening of the second day, and attaining their widest expansion by degrees for about half-an-hour during the early morning, after which they close and sink below the water. The flowers of *Rudgeana*, a Brazilian species, never get beyond the bud stage. B.

THE TORCH LILIES (*Kniphofias*).

THE value of the Torch Lilies in our gardens centres in the fact that they produce an abundance of the brightest flame-coloured, orange, and yellow flowers in the autumn months. On a bright day in October or late September, when there is so much more yellow in the daylight than in the early summer months, the orange hues of the *Kniphofia* flowers derive an additional glow from the reflections of the autumn sky, and they are then seen at their best, just as the deep orange and yellow of the *Montbretias* never appears so bright as when touched by the rays of the setting sun. The habit of the plants when in beauty is stately in the highest degree, and the many kinds now grown prolong their period of flower over several months.

Their Uses.—In many ways the *Kniphofias* may be finely used in the garden picture. With the best effect they may be grouped in the borders, large kinds in wide and spacious borders and the smaller and more compact species and varieties in those of smaller extent such as are found in villa and cottage gardens. Grouped near the water-side in bold masses they produce a

splendid effect, but must not be brought too near the water as the roots fear nothing so much as stagnant moisture. They may also be placed in bold groups upon the lawn, looking best in this way when only one kind is used in a group; they are also useful in the margins of shrubberies or mingled with Bamboos, ornamental grasses, and other plants of light and graceful habit. Michaelmas Daisies, especially the tall white-flowered varieties such as *White Queen*



KNIPHOFIA ALOIDES GRANDIS.

and *polyphyllus*, are never more charming than when seen in contrast with the orange tints of the Torch Lily. Dwarf kinds such as *Corallina*, the charming *K. Nelsoni*, and *MacOwani*, can also be flowered with great freedom in roomy pots and are then useful in the conservatory. As cut flowers the *Kniphofias* are also of value, not so much where choice arrangements are desired, but grouped in large vases of bold effect. The light elegant spikes of such kinds as *rufa*, *Nelsoni*, and *pauciflora*, are espe-

cially dainty when mingled with sprays of dark foliage such as *Prunus Pissardi*, lasting long and not out of place anywhere.

Cultivation.—The cultivation of these grand autumn plants is not difficult, and in most soils they do well. They will flourish in chalk and in peat, and are just as happy in loam or sand. Stagnant moisture, however, is fatal to them, and as the roots frequently run several feet in all directions, it is clear that the soil must be well broken by deep trenching and of such a nature that superfluous moisture passes quickly away. As the plants produce a great mass of foliage and flower in a short time it must also be rich, or freely enriched by manure when poor. Unfortunately the Torch Lilies cannot be termed hardy in all parts alike. They will stand a certain degree of frost with impunity, but when snow and rain have sunk into the hearts of the plants, sharp frosts, especially if prolonged, often play sad havoc with them; in Holland, at least, it is never safe to leave them unprotected after the middle of November. When dealing with many thousands of plants, as in a nursery like my own in which the culture of the Kniphofia is made a speciality, the safe wintering of so many plants is a matter of much thought and expense, and it may be well to describe what (after a good many trials) has proved to be the best method. About the middle of November when the first sharp frosts threaten, the Kniphofias are cut down with a scythe to within two inches of the ground and the beds entirely covered with a layer

of leaves (Beech or Oak) several inches thick. Over these leaves the cut stems of the Kniphofias are thickly laid to prevent the wind from scattering the leaves. This covering is never penetrated by the sharpest and longest frost, and the plants pass the winter in perfect safety. It certainly seems drastic to attack a field of Torch Lilies, often still in full beauty, and bring them down before the scythe, but if this be postponed until frost has taken hold of the ground the covering shuts in the cold and becomes useless as a protection. This method is easily followed in gardens where leaves are collected in the autumn for leaf-soil or forcing-pits, as they may be taken from the Kniphofias in March and used in other ways, being none the worse for this temporary service. In the spring the plants soon feel the influence of genial weather, and when treated in this way it is wonderful with what vigour young shoots are pushed up. This shows the value of undisturbed roots which is lost where the plants are taken up on the approach of winter and sheltered in cold frames, quite a needless precaution. Such kinds, however, as *K. foliosa*, *caulescens*, *Tysoni*, and *Northiæ*, which resemble a Yucca or Dracæna in growth, cannot, of course, be treated in the same way, and where the winters are severe should always be sheltered under glass.

Increase.—The natural and readiest way of increase is to raise the plants from seed, but as the flowers cross freely it is difficult to maintain their purity unless great care is taken. The many beautiful hybrids now grown never come true from seed, being themselves the outcome

of much intercrossing; they always have, therefore, to be propagated from offsets. Leaving out of consideration the stem-forming kinds such as *K. caulescens*, the Kniphofias may be roughly divided into two groups, one being the more or less evergreen section, of which the old *K. aloides* may be taken as a type, and the other those numerous hybrids now in cultivation which have been raised from the deciduous Abyssinian species, *comosa* and *Leichtlini*. When increasing those of the first, or evergreen group, the best plan is to take up the clumps about the middle of October and to separate the numerous side-shoots from the old stools with a sharp knife, cutting the roots as little as possible. These shoots, if potted and placed in a cold frame, start growing at once, and by May yield good plants for placing in the open. The other group, of which the fine dwarf-growing *K. Leichtlini* may be taken as an example, must be handled differently, and if possible never disturbed in the autumn. They are deciduous—at least in our climate—and it is essential that their roots, which are inactive during the winter, should not be injured at its outset or decay sets in and causes them to rot away. These plants should always be increased in spring, taking care that the long straggling roots are bruised as little as possible.

Best Kinas.—Where bold effects are sought few, if any, are finer than the magnificent *K. aloides grandis* or *nobilis*, with their massive towering spikes of scarlet and orange, rising to a height of 6 feet and more. A very distinct plant is *hybrida speciosa*; this bears very pale

green foliage, and being late in flower is at its best about the end of October. The spikes rise to a great height, and have very compact trusses of a peculiarly brilliant orange-red. A fine list of seedlings contains such brilliant sorts as *Pfitzeri*, *John Waterer*, *H. Cannell*, *Henry A. Dreer*, and others similar in colour. These are all characterised by freedom of flower, growing from 4 to 5 feet high, while the spikes differ from the usual blend of red and yellow in being more or less self-coloured in coral or sealing-wax red, shaded with a lilac or purple sheen. From the crossing of the old *K. aloides* with the fine Cape species, *MacOwani*, the beautiful hybrid, *Corallina*, resulted, which when true is perhaps unsurpassed. Established plants of this superb variety yield sheaves of brilliant salmon red, orange, and yellow flowers in short compact trusses. Unfortunately a great many mere seedlings are grown under this name, which are only enlarged forms of *MacOwani* and not for a moment to be compared with the true *hybrida corallina*. These all belong to the evergreen section.

A remarkable series of hybrid varieties has sprung from the influence of the Abyssinian species, *K. Leichtlini*, its variety *Aurea*, and *K. comosa*. From these, kinds new in colour have been obtained, none being more remarkable than the varieties *Triumph* and *Obelisk*, which produce superb and very large spikes of almost pure yellow. Of reds there are the beautiful *Leda* and *Sirius*; in orange the varieties *Ophir*, *Osiris*, and others. In *Diana* we have an enlarged *Leichtlini aurea*. The growth of most

of these kinds is very vigorous, and some, like *Star of Baden-Baden* (orange) and *Heroine* (yellow), reach a height of 7 feet, and more when in flower. From the intercrossing of *K. Tucki*—one of the hardiest kinds grown—which flowers in July, with the equally early *K. aloides floribunda*, a race of summer-flowering plants is slowly being produced, but at present they lack the brilliancy of the autumn kinds, and their popularity is therefore not great. The dwarf-growing *K. Nelsoni*—best described as a miniature *MacOwani*, and, if possible, still more free in flower—and *K. rufa*, plants which have only recently come into cultivation, are really fine kinds suited to small gardens. The last-named bears numerous spikes only 2 feet high, with flowers presenting an unusual blend of brownish-yellow and orange.

C. G. VAN TUBERGEN, JUN.

Zwanenburg Nurseries, Haarlem.

HYBRID IRISES.—Seeing in Messrs. Backhouse's list a description of some new hybrid Irises, raised by Mr. Yeld of York, I procured the following kinds:—*E. E. Adams*, lavender with a beautiful halo; *Eleonor*, sulphury-rose with deeper rose falls; *Fay*, brownish-rose, tall habit; *Oporto*, deep wine-coloured self, very fine; *Porsuna*, shaded orange with large orange beard; *Rosabelle*, like a small *Queen of May* and very dwarf; and *Verbruna*, fine metallic blue, also dwarf. The parentage of these plants is not stated, and the flowers, though small (near the *Cengialti* group for size), are very pretty, numerous, and varied in colour. Other kinds offered are:—*Celia*, a whiter form of *Bridesmaid*; *Dawn*, white and gold; *Forester*, reddish-purple; *Galatea*, white with orange beard; *Hera*, milk-white with gold markings; *Lynette*, pale blue; *Samnite*, purple; *Sea-nymph*, resembling *Pallida celeste*; *Selma*, blue; *Sincerity*, a dark form of *Queen of May*; and *Umbro*, pale lavender.—G. C. LEMAN.

A YELLOW HYBRID RHODODENDRON (*R. Smithii-aureum*).*

AMONG the myriad varieties of the hardy Rhododendrons raised in England during the past sixty years, there are many beautiful things, but there is not one among the hardy kinds more distinct and interesting than this yellow-flowered, hardy evergreen Rhododendron.

Raised some seventy years ago by a nurseryman of Norbiton, it formed one of a series of early crosses between the Rhododendron and the deciduous Chinese Azalea. In spite of their beauty, however, the plants have never become common, and for many years past this beautiful kind has been rare in gardens and nurseries. It is not of very vigorous growth, somewhat straggling in habit, and coming as a cross between a yellow form of the Chinese Azalea and *Rhododendron caucasicum*, the latter of which it resembles in habit, though nearer the Azalea in its flowers. These are very like those of its Chinese parent, and are borne in rounded clusters of a fine buff yellow, marked with orange upon the upper segments. It blooms early in June, after all the yellow Azaleas are over, giving an added value to its refined and beautiful clusters.

Other Hybrids.—Many other plants have been raised as crosses between the Rhododendron and Azalea, and a few are to be found in collections as at Kew and elsewhere. One of the best known is *R. azaleoides*, a plant of many other names, resulting from crossing the deciduous Swamp Honeysuckle (*Azalea viscosa*) with the rose-coloured *R. maxi-*

* With coloured plate from a drawing by H. G. Moon, at Holmewood, Cheshunt.



RHODODENDRON SMITHII AUREA

mum. It grows as a compact bush of about 3 feet, sub-evergreen, but losing its leaves in severe winters. The deep, funnel-shaped flowers are carried in large rounded clusters, and vary in colour from pale rose or lilac to lilac-purple, with often an outer edging of a deeper shade. It blooms during June, its blossoms very fragrant when fully open on a warm day. A fine group of it is grown at Kew, immediately in the rear of the great Palm House. (Syns. *R. hybridum*, *fragrans*, *odoratum*, and *ponticum deciduum*.)

Other scarce crosses are *R. gemmiferum*; *Cartoni*, between *Azalea nudiflora* and *Rhododendron catawbiense*; and *R. gowenianum*, a plant of mixed descent, coming from *Azalea nudiflora* or *viscosa* and a *Rhododendron* itself a cross between *ponticum* and *catawbiense*. This plant has downy stems and sub-evergreen leaves downy when young, but smooth when mature. The flowers are of a delicate light purple. Yet another of these pretty crosses is *roseum odoratum*, a charming little shrub with small, richly fragrant flowers of rosy-red, which may be finely flowered in pots for the conservatory; of this plant there is a variety, *elegantissimum*, even prettier in its wealth of flowers, flushed and shaded like apple blossom. Many crosses of like nature have died out altogether before the rich choice of hybrid *Rhododendrons* now cultivated.

The above are old plants which have become rare, but of late years a series of similar crosses between these evergreen and deciduous shrubs have been raised by Belgian growers, and sent out under

the name of *Azaleodendron*, recalling their mixed descent from various hybrid *Rhododendrons*, such as *Prince Camille de Rohan*, *Leopard*, and *John Waterer*, and the hardy Ghent *Azaleas*. The varieties sent out included *Victoria*, with flowers of rosy-white; *Docteur Masters*, small flowers of rosy-lilac with horse-shoe markings of rosy-crimson; *Docteur Wittmack*, large white flowers, flushed at the base of the tube; *Directeur Rodigas*, pale rose shaded crimson; *Edouard André*, with narrow leaves and small flowers of creamy white; and *Jules Closon*, with large finely-formed flowers of rose and white. These semi-evergreens, though hardy and of fair vigour, have not become popular, and seem likely to disappear as others of like origin have already done.

THE FLOATING GARDENS OF KASHMIR.—One would not notice these unless one's attention were attracted to them, for they look like well-cultivated banks of earth. But the term floating-garden is no misnomer. They are not of natural growth, but are constructed by the peasants, who produce upon them cucumbers and other vegetables for market. The roots of aquatic plants growing in shallow places are divided about 2 feet under water, so that they lose all connection with the bottom of the lake, but retain their former situation in respect of each other. When thus detached from the soil they are pressed into somewhat closer contact, and formed into beds of about two yards in breadth and of an indefinite length. The heads of the Sedges, Reeds, and other plants of the float are now cut off and laid upon its surface, and covered with a thin coat of mud, which, at first intercepted in its descent, gradually sinks into the mass of matted roots. The bed floats, but is kept in its place by a stake of Willow driven through it at each end, which admits of its rising or falling with the rise or fall of the water.—KNIGHT, "Where Three Empires Meet."

MAGNOLIAS IN NORTH AMERICA.

THE most complete account of the Magnolias, as regards kinds, was that in the first number of FLORA by Mr. Nicholson; but as several of the Magnolias come from North America, where the climate, soil, and other conditions suit them so well, it may interest lovers of the family to hear something about the kinds native to that country, and described by Miss Rogers in "American Country Life" for April:—

"Only two Magnolias grow wild in the north. They are the Sweet Bay and the Cucumber Tree, the former a white-flowered shrub that grows in swamps, the latter a tall tree with small greenish flowers. Both of them bloom in May or June, after the leaves open.

"The Sweet Bay (*Magnolia glauca*) is in the north a deciduous shrub, rarely more than 15 feet high; in the south it is an evergreen tree, which in central Florida is seen 80 feet high. Its flowers are small for a Magnolia—only 2 or 3 inches across—but delightfully fragrant, and so always eagerly bought of street vendors in the cities near which they grow. *M. glauca* is also called White Bay, Swamp Bay, and Beaver Tree. The northernmost place in the world where it grows wild is a swamp near Gloucester, Massachusetts.

"The Cucumber Tree (*Magnolia acuminata*) is a shade and avenue tree, but its flowers are the smallest and least conspicuous of all the Magnolias. They are only an inch or two in diameter, and being greenish-yellow, are lost among the large leaves. The tree is hardy in New England and grows scattered through the forests west to the Mississippi River. Its fine pyramidal form, quick growth, and its clean, luxuriant foliage are its chief merits. In summer the 'Cucumbers' stand erect, 3 or 4 inches in length, and flushing a rosy pink make a pretty contrast with the green around them.

"The Large-leaved Cucumber Tree (*Magnolia macrophylla*) has the largest leaves of all the Magnolias—they are often more than 3 feet long. But only in sheltered places can they escape being torn by the wind, and they are useless for decorative purposes, for they fall on the approach of winter. They are remark-

ably thin as compared with the evergreen kinds. This species excels all the rest in the size of its flowers. These are often 10 and 12 inches across, and can be readily told from the other tender species by the purple spot at the base of each of the inner row of petals. The tree often reaches the height of 50 feet, and has been planted as an ornamental and a curiosity as far north as Boston, where there is a specimen 20 feet high. The other Magnolias native to the Southern States have pure white flowers, except *Magnolia cordata*, the Yellow Cucumber Tree, which has bright canary-coloured ones. It has been described as a variety of *M. acuminata* by some botanists.

"The Umbrella Tree (*Magnolia tripetala*) is another large-leaved deciduous southern Magnolia, but it can readily be told from the species *macrophylla* by the fact that the flowers are pure white, and the three petal-like sepals turn back—an exception, in fact, to all rules in the Magnolia family. The leaves are smaller by half, and the flowers by 2 or 3 inches; the latter have a disagreeable odour. The name—Umbrella Tree—comes from the arrangement of the leaves in whorls around the ends of the branches, each whorl forming a small umbrella. The tree often attains a height of 40 feet. It is often seen in gardens in the middle and southern States, and grows wild from Pennsylvania south to Alabama.

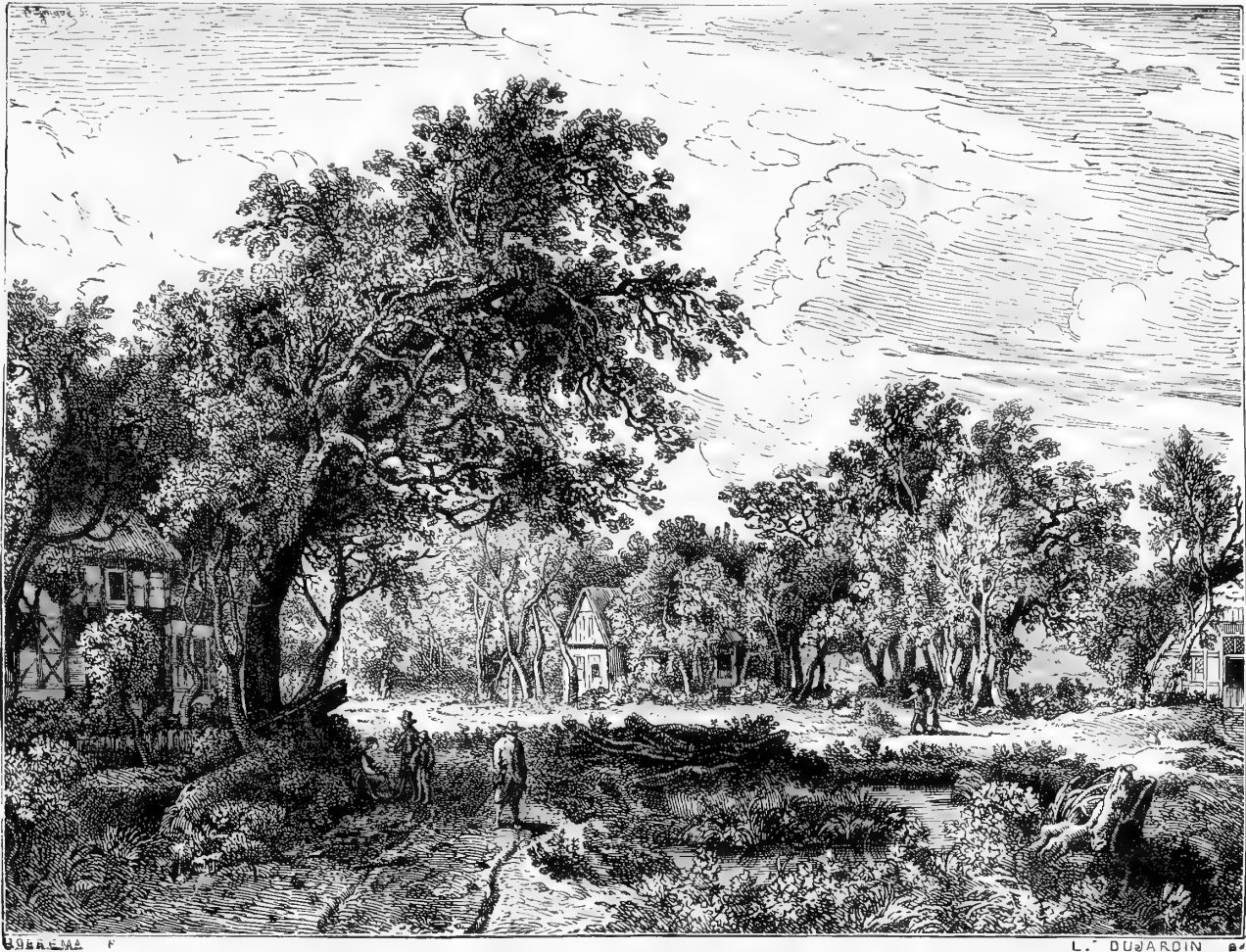
"The Ear-leaved Magnolia (*M. Fraseri*), also called the Mountain Magnolia, resembles the Umbrella Tree in its stature and its flowers, but it is readily distinguished from all other Magnolias by the fact that its ample leaves are prolonged into two ear-like lobes at the base of each. This is the most tender of the native species.

"The Bull Bay (*Magnolia grandiflora*) is the species that furnishes the splendid evergreen foliage that is shipped north for Christmas decoration; and is used for similar purposes in the South. The upper surface of each leaf is a dark, lustrous green; the lining is of a rusty-red fuzz, which is shed when the leaf is old. There is but one other native evergreen species, and that is the Sweet Bay already described, which has much smaller leaves and flowers.

"The blossoms of the Bull Bay are long waxen cups of creamy white, from 7 to 8 inches across as a rule. There is a variety of it called

gloriosa, which Mr. Berckman says is fully 14 inches in diameter. The Bull Bay is oftenest seen as a small tree, from 20 to 50 feet high, planted on lawns and in parks or lining avenues. In the forests of Louisiana, where it reaches its greatest perfection, it stands 80 feet high, with a trunk 4 feet thick, and Sargent calls it 'the most splendid ornamental tree in the American forests.'"

much of the original brilliancy is lost, and, as we now see it, often monotonous or negative in tone; but even with these drawbacks the effect of this picture is superb, because the drawing is so true. What eyesight and insight Hobbema had for the facts of Nature may be seen



LANDSCAPE BY HOBBEA.

LANDSCAPE AND WOODLAND PICTURES BY THE MASTER PAINTERS.

LOVERS of old Dutch painting are agreed that Hobbema is among the greatest of landscape painters, and in proof of this we may cite the picture in the National Gallery, which is certainly a fine example of painting light and air. In the work of the old Dutch landscape painters

in that noble avenue-picture in our national collection, and though the artist died in a workhouse, his work will live so long as man has eyes for the true and beautiful in landscape art.

Meindert Hobbema was born at Amsterdam in 1638 and died in 1709. He was a contemporary of J. van Ruysdael, and was supposed to be a pupil of Solomon van Ruysdael. That he was held

in estimation by his fellow artists is proved by the fact that some of the foremost of them willingly painted the figures for his pictures, although the public seem to have been slow in giving him the position which he holds among the Dutch masters at the present day. His most frequent subjects are villages surrounded by trees, with winding pathways and water-mills. The composition of his pictures is singularly happy, and they are characterised by a warm golden tint.

THE PATAGONIAN BEECH (*Fagus antarctica*?). —Sir T. H. Holdich, in a paper read before the Royal Geographical Society, refers to the fine effect of this tree. Our northern Beeches do not give bright colour even in autumn but several kinds from the far south are more showy at various stages of growth, and plainly the autumn beauty of this kind is great: "The most conspicuous form of vegetation which clothed the mountain-sides and filled the gullies of the lower slopes was the Patagonian Beech, and, excepting perhaps the North American Maple, there is no vegetation which adopts such splendid hues in autumn. We wandered through woods which were a blazing harmony (if that be possible) of scarlet, purple, and orange. The tints of the autumn-painted woods spread themselves in brilliant interlacing threads from the banks of the stream at our feet to the foot of the snow-line of the rugged sierras above our heads. It was as if the mountains were hung with vivid sheets of oriental carpeting. Scarlet and gold faded to purple in the distance, and could be traced in bluer, fainter, lines to the foot of the grey granite cliffs, above which hung the white masses of snow-cap. Over all was there usually a dull grey sky and the white streaks of mountain mist, but variation was the keynote of Patagonian weather. Drenching rain, blinding fog, or thick grey snow-storm might alternate with clear deep-blue sky patches and fleecy clouds, with shafts of sunlight athwart the hills, making a golden glory of the woods and hanging deceptive rainbows across the valleys."

THE LONDON PARKS: THEIR DESIGN AND PLANTING.

THERE is no city with so much varied and beautiful land, free for public enjoyment, and kept without stint of men or material, as London. The climate is not against, but rather in favour of, all hardy trees and shrubs, and the always welcome turf. The one drawback of smoke does not affect them so much, and that will surely be got over before many years are past, being a self-inflicted nuisance. We know enough to get rid of the smoke of London in three years if the "powers that be" would only take it in hand. Having these advantages we ought not to lose the good of these parks through inartistic design or by stereotyped repetitions of each other's ways in spite of variations of soil. Nothing could be worse than that these parks should be devoted to a single plan of "floral decoration" destructive of all initiative on the part of the able men in charge. They should not be planted with only common nursery trees which one may see by every suburban road. Not that the parks should be botanic gardens, because we have already the finest existing botanic garden at Kew, but, having such an ample area of space, they might show groups and masses of the finer trees and shrubs for which space could not be spared at Kew. They should also be planned in some relation to our climate, and not be based entirely on exotic things. They are English parks, and to make them anything like the Champs Elysées, or the tea-garden style better known in England, would be a serious mistake. The best of these

London parks have been parks in the past, and it should be a pleasure to keep them as parks.

Recent Changes.—The parks are so precious to the public that any needless interference with their breadth, airiness, and beauty of surface is a serious loss; but let anyone go to Hyde Park now, and he will see how the heart of the park is disfigured and cut up to make a large nursery garden not really needed for the beauty or planting of the park. If one chief commissioner has the right to commit such an outrage without public consent or notice, any other may have the same power for evil. For no weightier reason than to improve the view from the late Mr. Albert Grant's house at Kensington, the old gardener's house at the corner of Kensington Gardens was removed and a suburban villa put instead of it in the middle of the park. The old house could not have been in a better place, as it did not interfere with the beauty or breadth of the park; but you cannot plant a London villa in a park without also adding to it the walks and roads necessary for its service. The objections to what is now being done are: (1) the loss of area in the centre of the park; (2) stiff banks; (3) false lines out of harmony with the naturally beautiful surface of the park; and (4) the dreadful addition to the mass of spiked iron railings. Even those who admire or who endure the sight of iron railings would be almost alarmed if they knew how many miles of them there are in Hyde Park—a waste of metal and labour, as half of them are needless. If the footways by the drive

at the Serpentine must be fortified by lines of ponderous and hideous iron posts and rails, why not the far more crowded streets? They destroy the good effect of the Serpentine from many points of view. If the park is only to be considered as a run for town-imprisoned dogs, the railings must be kept, but quite half of the iron might even then be done away with. Park or garden beauty that can only be seen through spiked railings is bought at too high a price.

False Earth Lines.—As to the stiff banks now being formed, the natural surface is so good that any attempts to alter it are needless, and sure to end in ugliness. The practice in the London parks of raising mounds is against all good work in landscape gardening. It is assumed by the mound-makers that the natural form of the ground is not right for their purpose, and so dumpings of earth are thrown up here and there. Anyone going through the parks will be able to judge whether anything is gained by this distortion of the surface. Piling mounds of earth round a tree is a sure way of hiding the beautiful form of the stem as it arises from the earth, often with a wide-spreading base, and where this needless work has been done the base of the tree is often hidden, and the stem comes out of the ground like a broom-handle. It also shortens the life of the tree and often kills it outright. Anyone now walking along the Bayswater side of the park may see the stiff bank round the nursery the whole way along. There a long gentle vale (rightly kept unplanted), which starts from the Marble Arch and

goes down westward, and used to recede in the distance, as it should, is now barred by this rigid bank. In valleys like that of the Thames there is no planting either of tree, flower, or shrub that is one whit advanced by the creation of artificial mounds. The true way is to see and feel the beauty of the natural form of the ground, to keep it jealously, and to plant it rightly.

And what is the excuse for the present injury to the park? To grow a number of "bedding" and annual plants in order to make a summer show by Park Lane, weather permitting. It is not right to criticise if we cannot offer any better suggestion. The better way is to plant the park as a whole with beautiful hardy things, and on an enduring system. The energy which is bestowed on ephemeral plants which perish every year might make Hyde Park as instructive, in its way, as Kew. The soil and surface are better than at Kew, and even under our smoke-cloud a great number of the hardy trees and shrubs of Europe and northern countries could be grown there. As it is, much of the labour is lost with the first frosts, and the weary wasteful round has to be gone all over again to produce bad carpeting in summer and bare graves in winter. Let anyone interested in garden design or planting go and see the beds in Park Lane now, and say if that be the right aspect for a park or garden at any time of the year. Anything uglier than these places, even in the middle of the summer of the past year, can hardly be imagined in the form of a garden. Yet we have to reckon with such seasons. It is a

costly and inartistic system, and wrong in every way for our climate, for colour, and for effect. It is often said in large gardens that are devoted to this system that we cannot get away from it; but our fathers had good gardens before "bedding" was invented, and picturesque grouping is far better. In a northern country like ours, in which frosts occur even in summer, it is folly to trust to tender plants alone.

Palms in Parks.—Nor is sticking Palms about a right way to adorn an English park. Even in the South of France, where there is a climate to encourage them, they look out of place. In our climate they are about the worst things that could be chosen. Last summer the plants used for colour effect in the parks were in many places a complete failure, and yet all the choicest, the best nourished, and the sunniest spots were given up to these wretched exotics. With so many dull days these bad colours were depressing in the extreme. Shocking combinations of colour were also seen, such as blue Lobelia, scarlet Geranium, mauve Verbena, with purple and variegated Fuchsias, all crowded together within an area of a few feet, distressing in their warring shades. But granting for a moment that the exotic system now in use is the only one worthy of these parks, is it right to disfigure them with large nurseries in order to carry it out? No; it should be done as in Paris, at Auteuil, where there is a large establishment for the general use of the parks, thus saving them from any needless disfigurement, and supplying them with all the plants they require.

A lesser evil of the system is the encouraging of the false idea that the only things for the adornment of a park are what are grown in hot-houses for eight months of the year, whereas nothing for the permanent beauty or good of a park can be done in a hot-house. It also gives rise to a pot-and-kettle race of gardeners, useless in the open air, where they are most wanted. Some may say that the people enjoy such floral displays of stiff Hyacinths in the spring, lasting but a few days in our dirty atmosphere, and patterns of flowers in the summer. But give them a chance to see something better, as in the Regent's Park, where a concession has lately been made to natural and artistic ways in the shape of a little Reed-fringed pool for Water Lilies, and nothing in the park is more admired. Why not continue it on a larger scale? The upper part of the Serpentine could be treated in the same natural way, but on a bolder scale. The natural vegetation of the water-side should be seen there—Willows, Dogwoods, Meadow Sweets, Reeds, and Water Lilies, instead of the poor evergreens now dotted about. That most deplorable of stone gardens at the head of the Serpentine should be laid out as a little flower garden with simple square beds; and if the sculptured "ornaments" there were broken up and buried in the bottom of the walks it would be no loss either to the gardening or to the building art.

The permanent planting of the whole park should be considered, and we should see something better than the broken-backed Elms, and the com-

moner trees. The Elm, the most dangerous and worst of trees to put in a town garden or along roads and paths, is far too much seen in the park, and often surrounded by spiked rails. If we planted good trees here we should have their beauty in the winter as well as in the summer—to artists and others a better thing than even a summer effect—instead of wasting all our efforts in making a show for a few months in one place only.

The public parks do not afford a tithe of the beauty and interest of which they are capable, if we take into consideration their vast extent, their variety of soil and surface, and the large sums spent annually for their keeping. Everywhere in them we see vast surfaces neglected, or only planted with a few common-place trees; everywhere evidence that no thought is given to enduring and distinct and artistic planting; and everywhere monotony in regard to materials used. A number of trees become popular, and they are planted in about the same proportion. Thus we find about the same type of vegetation everywhere, and the capacities of our parks as national gardens are undeveloped.

A Suggestion.—The system likely to give us the noblest series of public gardens is to treat all the parks and gardens of a great city as a whole, and to establish, as far as possible, in each a distinct type of the finer vegetation. We might devote one city park chiefly to deciduous trees; a suburban one like Richmond to evergreen forest trees; another to the almost countless flowering

trees and shrubs that are the glory of the grove and copse in all northern countries. Or we might have a square or park mainly of British trees and shrubs, another of European, another of American, and so on. In such ways we might help the various superintendents to more individuality, and so free them from paltry rivalry with one another in the matter of "bedding plants." They could then take up subjects best suited to the ground, and develop their beauty and variety to the completest extent of their knowledge. In the vast expanse of our public gardens there is not one interesting branch of arboriculture or flower culture which we could not develop in a way hitherto unexampled. On our botanic gardens already in existence (most of them not large enough for the proper grouping and arrangement of one single family of trees) this system would have the best results. It would remove the necessity of cramming every available plant or tree into a small space, and permit of their curators devoting adequate attention to the many tribes of plants which require continual care or renewal.

Few of our botanic gardens at present give much idea of the variety and beauty of trees, and none gives any worthy expression of even the vegetation of Europe alone! What do we see of the beauty and character of any one large family of trees by planting them all at regular intervals over a plot, or in the various ways we see them arranged in botanic gardens? The common way with botanic gardens would be right if we had no higher object than to pro-

cure specimens to illustrate the grammar of the nomenclature men have given plants. But if our aim be to show the beauty and dignity of the vegetable kingdom, we must set ourselves free from such small notions. Clearly, the way to do this is to treat our vast series of gardens as a whole, and stamp on each some marked feature—from the smallest square, with Ivies or Hawthorns, to the great park, adorned with the trees of a hundred hills.

In every direction distinct types of vegetation might be met with, instead of the "universal mixture" now everywhere seen, which so soon trains the eye to take no more notice of trees or plants than of the railings around the squares. It is not, like many of the changes we long for in towns, impossible to carry out from want of means. The adoption of it would at once tend to make the money so freely spent on our public gardens go toward valuable results, and might easily free us from the present way of devoting vast sums to the growth of tender plants, and even, as in the case above pointed out, disfiguring one of the noblest parks in the endeavour to get them.—W. R.

THE LANGUAGE OF FLOWERS.—"Nature flings her flowery carvings everywhere, each one complete and fresh and perfect, and such a joy that, were it the lone one of its race, it would draw the nations into pilgrimage for its worship. She paints them, too; she gives them colour. If any seem ugly as a whole, take a fragment and put it under a microscope, . . . under the lens a quarter inch of rosy petal flushes and spreads like a sunset sky. And then instead of speech she gives them fragrance . . . unless, indeed, Huxley's fancy be true, and by ears fine enough a voice could also be heard, as of a stream murmuring through secret channels."—W. C. G.

FLORA

AND SYLVA.

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THREE THINGS TO WORK FOR

WE have now the best collections of open air plants and shrubs that we could wish for, many more than the soil and conditions of any one place will allow us to grow; but our climate is in various ways against the complete enjoyment of many of them, even when they are quite hardy. The false starts caused by our open winters are fatal to many early-blooming plants, and spring frosts that will sometimes injure native trees are a harsh trial for those of warmer countries. Many of the late-blooming plants of countries with a long, severe winter flower much earlier with us, though from frequent wet or rough weather their time of beauty is short. A good way to deal with such plants is to grow them so that they can be brought into the house, not for forcing, but simply placed in passages and cool windows to flower. The charm of the plan is that it makes forcing unnecessary, and it would be wrong in this case. Many plants lend themselves to this plan, from Christmas Roses to Lilacs. Last Christmas I noticed some Primroses opening their buds in a wood, and, lifting the plants with balls of soil, I put them in large dishes with a few flakes of moss from the same wood

and gave them a gentle watering. It was a late and severe spring, and this simple act, which did not take half an hour, gave charming bloom several months before the unprotected plants came into bloom. Thus plants that are quite hardy can be removed from the danger of storms, heavy rains and frost, and their blooming prolonged. Even the dwarfed Magnolias and other flowering shrubs may be bloomed in the same way. The practice entails no change in their cultivation; it is simply placing a certain number of plants so that they may be taken readily into the house for shelter; the best way of growing them being in baskets or pots.

Shoots of Flowering Shrubs cut without forcing.

An excellent way, and one far too little used, is the plan practised by the Japanese with their flowering shrubs. They cut them when in bud and adorn their rooms with the flowering branches. The Wintersweet (*Chimonanthus fragrans*), which ought to be on every south wall where there is a garden, if stricken by frost during mid-winter when it flowers so well, will often have all its flowers destroyed in a night; but by taking strong shoots of it laden with buds, and placing them in a room in good time, we may

enjoy them for weeks in the house in spite of accidents of weather. The little Russian Rhododendron, too, a poor feeble thing which our mild springs bring into flower far too early, is so much spoiled by the weather that few people notice it; but if we take rather bold shoots of it (as large as the bush will bear) and put them in a vase placed in a cool window they will flower for weeks very prettily. The day on which I write this fierce hailstorms are sweeping through the valley, and these showers (which the early Narcissus, drooping their heads, evade) destroy flowers that are fully exposed. But cut flowers we have indoors, safe from all such dangers, and that without the use of any heat but that of an ordinary dwelling. There is scarcely a spring-flowering shrub but can be treated in this way; even the Rhododendrons if need be, though in many places they are more independent of the weather. The plan is so simple and beneficent to the plants as well as to their owners, that it ought to be practised far more than it is; we may even in this way do good to the shrubs by thinning and opening them up—the best way of pruning. The best vessels for such work are of bronze or Delft ware, but others will do. Some experience is needed as to the best way and time for cutting each kind, and the size of the shoots will want observing. Generally the shoots should be rather long and stout, and so arranged as to show their form as well as the flower. Shrubs like the Apple and Almond tribe it is usually easy to get strong shoots of without injury to the bushes, and many

flowering shrubs also grow so thickly that some thinning is desirable. The way the single Camellia, grown out of doors as a hardy shrub and cut for the house when coming into bloom, develops its flowers in a room is a precious lesson of what we might gain if the plan were carried out with most of our flowering shrubs.

*Plant the North
Aspect of Walls
and Hillsides.*

It is not every place that has different aspects of ground, but where they exist they should be taken advantage of by planting on the north side even things that enjoy the south for the sake of prolonging their season of beauty. In this way a difference of fifteen days may often be secured in the blooming of favourite shrubs and plants. It is not so likely to add to our resources as the plans above described, but it should not be neglected where it can be carried out. There are many things that do best on north slopes; the yellow climbing Roses, for example, which do so well on a south wall in certain districts flower even better on north walls, and add much to the charm of Rose-growing. * * *

A CLIMBING HYDRANGEA.—In habit this is widely removed from the commonly known Hydrangeas, being like a climber, attaching itself by tiny rootlets. The large corymbs of white blossoms consist for the most part of the small fertile ones, the sterile flowers being limited to a scattered few around the cluster. It will clothe large boulders with a network of its long stems, and run up trees and walls. It has many names—*H. volubilis*, *H. scandens*, and *H. petiolaris*—that by which it is best known. There are several other kinds of climbing Hydrangea found in the Himalayas and in Japan, and an allied but totally distinct plant, *Schizophragma hydrangeoides*, with which this is often confused.

THE GREATER TREES OF THE NORTHERN FOREST.—No. 15. THE BALD CYPRESS (*Taxodium distichum*).

THIS beautiful hardy tree is in our country too often treated as ornamental only, and frequently ill-placed at that, so that in many country places usually it comes to little. Many years ago, before the taste for Californian conifers arose, it was planted more frequently, and so we see in some valley-gardens stately trees of it, mostly by or near water. About the time our own people were busy planting the tree many were planted in the north and west of France, and in the valleys of the Loire and the Seine beautiful examples may be seen, some over 100 feet high. Near Orleans there lived once a nurseryman having some fine trees of this on his ground, who left his property to some good sisters in the town on condition that they should always preserve his Cypress trees. The ground that was once a nursery is now a grazing-plot, adorned with several stately trees standing up over their surroundings as distinctly as the great church of Orleans towers above the houses around, their stems like enormous pillars, beautiful in colour and form. They are not beside water, but on a rich bottom.

Culture.

It is not necessary to have a river bank on which to plant, though very often that is the best position, as rivers carry down deep soil. But that may occur without the immediate presence of water, and wherever there is this deep, moist, and free soil, we may in our country hope for success with this tree. Having proof of its

hardiness, fine form, and great size, we should give up the practice of regarding it as an "ornamental" tree only, and mass it in likely places where we shall eventually get its true forest aspect—one of the noblest in the northern world. By so doing it by no means follows that we lose its beauty, and the fresh, distinct effect of the foliage is good in all conditions where the tree thrives. The habit of propagating this tree from cuttings may be one cause of its failure. It should always be raised from seed and planted young, the younger the better provided rabbits are kept out by well-supported netting. The presence of water does not assure us of a good result, as some artificial waters are formed in poor or cold, impervious soils.

The English name of this tree, "Deciduous Cypress," is not a good one, and I follow the accepted American name of "Bald Cypress."

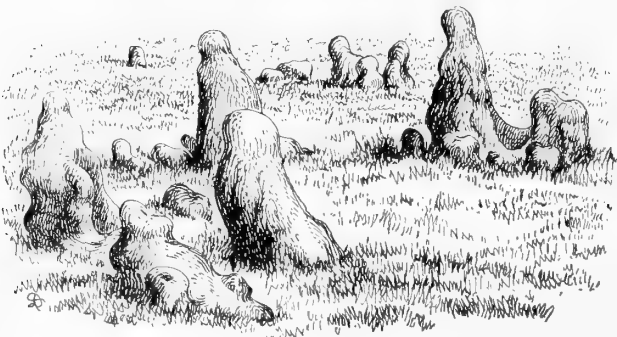
The Wild Tree.

In the Cyprières or Cypress swamps the aspect of the crowded trunks and the interlacing branches is weird in the extreme. An interesting picture of the tree at home is given by Bartram in his "Travels": "It generally grows in the water, or in low flat lands, near the banks of great rivers and lakes, that are covered the greater part of the year with 2 feet or 3 feet depth of water; and that part of the trunk which is subject to be under water, and 4 feet or 5 feet higher up, is generally enlarged by buttresses or pilasters which, in full-grown trees, project on every side to such a distance that several men might easily hide themselves in the hollows between. Each pilaster

terminates underground, in a very large, strong, serpentine root, which strikes off and branches every way just under the surface of the earth; from these arise woody cones, called Cypress knees. The large ones are hollow, and serve very well for bee-hives; a small space of the tree itself is hollow, nearly as high as the buttresses already mentioned. From this place the tree, as it were, takes another beginning, forming a grand straight column 80 feet or 90 feet high. The trunks of these trees, when hollowed out, make large and durable canoes, and excellent shingles, boards, and other timber, adapted to every purpose in frame buildings. When the planters fell the trees, they raise a stage around them so high as to reach above the buttresses; on this stage eight or ten negroes ascend with their axes, and fall to work around its trunk. I have seen trunks of these trees that would measure 8 feet, 10 feet, and 12 feet in diameter for 40 feet and 50 feet of straight shaft."

*The Cypress
Knees.*

The "knees" vary in size and number with the depth of water or the amount of moisture in the soil. From fifty to one hundred knees spring from



KNEES OF THE BALD CYPRESS.

the roots of one tree, rising sometimes to a height of 10 or 12 feet in order to

emerge from the water; or, when the tree grows in land covered with shallower water, the knees remain low but



FRUITING SPRAY OF THE BALD CYPRESS.

increase in number. Trees transplanted to high dry ground often develop small knees, barely rising above the soil. The accepted belief is that the knees serve to aërate the submerged roots, which without their aid would be entirely deprived of air. They may also serve to anchor the tree in the soft muddy ground in which it grows. The knees are often hollow in old age, and consist of soft spongy fibres covered with thin red-brown bark, and are extremely light. Several knees, produced near together, often grow into one. The roots connecting the trunk and the knee are thinner than those beyond the knee.

Range.

In "Silva of North America" Mr. Sargent says:—"The Bald Cypress inhabits river-swamps which are usually submerged during several months of the year, the low saturated banks of streams, and the wet depressions of Pine barrens. It is distributed from southern Delaware, where it grows on the banks of the Nanticoke River near Seaford, and covers the great



TREE OF THE BALD CYPRESS AT SYON—WINTER EFFECT.

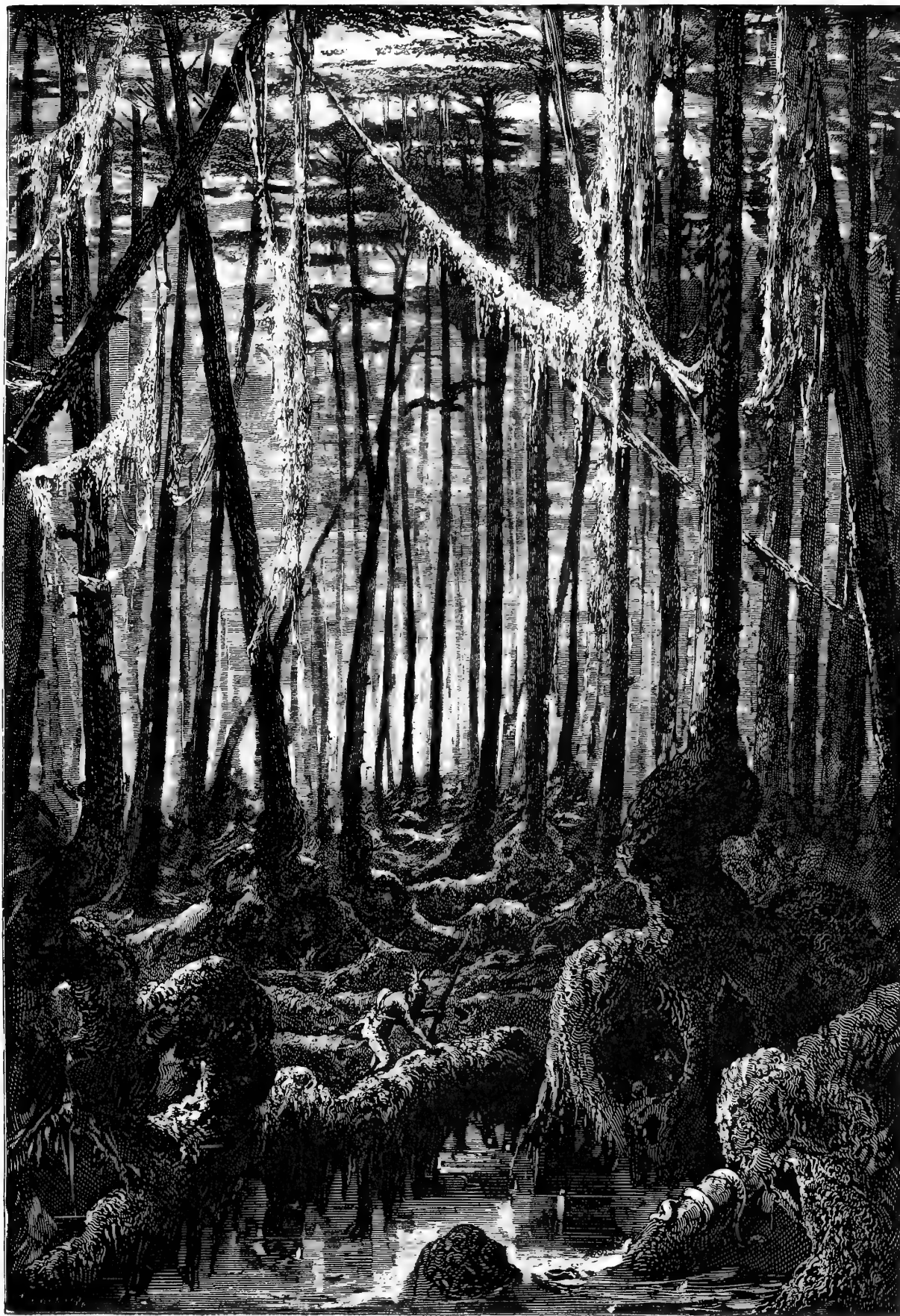
swamp of Sussex county, where trees of the largest size stood until a few years ago. Thence southward near the coast to the shores of Mosquito Inlet and Cape Romano, Florida, through the coast region of the Gulf States to the valley of the Devil River in Texas, and through Louisiana and Arkansas to south-eastern Missouri, eastern Mississippi, and Tennessee, Kentucky, southern Illinois, and south-western Indiana. In the South Atlantic and Gulf States, where it attains its largest size, this tree covers great areas of river-swamps from which the water rarely disappears; in drier situations it grows with the Red Maple, the Water Ash, the Liquidamber, and the Bay, and in the Mississippi valley its associates are the Swamp Poplar and the Water Locust. The glory of the forests of the south, and one of the most valuable and interesting trees of the continent, the Bald Cypress, with its tall massive trunk rising high above waters darkened by the shadow of its great crown draped in streamers of the grey *Tillandsia*, is an object at once magnificent and mournful."

"In the great swamps of the Gulf Coast, where the Bald Cypress attains its greatest size, the water is so deep through nearly the whole year that its seeds cannot germinate, and there are no young trees and few small ones growing up to replace the old ones, which are being fast converted into timber. Some of the largest must have reached a great age, for after its earliest years the Bald Cypress grows slowly. When these old trees began their career their seeds must have fallen on ground warmed by the

sun; the present depth of water beneath them can be explained only by the hypothesis that the whole Gulf Coast of the United States is gradually sinking. As the trees, when felled green, sink in the water and are lost, it is necessary to kill them standing by "girdling" them the year before. The negro wood-choppers cut through the stems above their swollen bases, and trim off the branches. The trunks are then floated out during winter when the water is so high that they may be towed into the rivers to the mill. Two kinds of wood are recognised, the black and white. The black is harder and more durable, and is produced near the base of large trees. The difference is due either to age or some unknown individual cause."—GRAY.

Wood.

"The wood is light and soft, close, straight-grained, not strong, easily worked, and very durable in contact with the soil. It is light or dark brown, sometimes nearly black, with thin white sapwood, and contains broad, conspicuous, resinous bands of small summer-cells, and numerous very obscure medullary rays. It is largely used in construction and cooperage, and for railway ties, posts, and fences, and is one of the most valuable woods of North America. Most of the wooden houses in Louisiana and the other Gulf States are made from the wood of this tree, and it is now sent in large quantities to the northern states, where it is used principally in the making of doors, sashes, balustrades, and the rafters of glass-houses. From the trunks, the Indians of the lower Mississippi valley formerly hollowed their canoes."



A CYPRESS SWAMP OF THE SOUTHERN STATES.

*Varieties and
Synonyms.*

There are worthless varieties of the Bald Cypress which we reject as of no garden value and often offered under false names (i.e., *Glyptostrobus*) which serve only to throw pseudo-botanical dust in people's eyes. These distortions should be avoided by all who wish to realise the beauty and dignity of the tree. The true way to a fine result is to grow it from seed of the wild tree, which germinate readily in a few weeks, and growing it in the best natural conditions. Like most trees of the Pine order it has a tendency to vary in its branchlets, and for nurserymen to seize such bits, and increase and name them, is to do much harm to the interest of good planting, especially to those beginners to whom a ponderous Latin name may seem to represent a real tree and not a wretched sport.

Taxodium distichum.—Richard, in *Annales du Muséum*, vol. xvi., p. 258. Loudon's *Arboretum*, vol. iv., p. 2481. Carrière, *Traité Général des Conifères*. Veitch, *Manual of the Coniferæ*. Sargent's *Silva of North America*, vol. x., p. 151.

Syn. *Cupressus disticha*, Linnæus. Michaux fils, *Histoire des Arbres Forestiers de l'Amérique Septentrionale*, tome iii., p. 4, tab. 1 (1813). *North American Silva*, vol. ii., p. 329 (1819). *Cupressinnata disticha*, Nelson. *Senilis*, *Pinaceæ*, 61; *Schubertia disticha*, of Mirbel and Spach; *Cupressus Americana*, of Romans.

JASMINUM PRIMULINUM (HEMSLEY).*

THIS beautiful shrub was first discovered by Mr. Hancock at Mengtse in Yunnan, and specimens sent by him to Kew enabled Mr. Hemsley to describe the plant as a new species, though he had some doubts at the time as to whether it was not, botanically, simply a variety of the older and well-known *J. nudiflorum*. Other specimens were

collected by me both at Mengtse and at Szemao further west, and these are now in the Kew Herbarium. The credit of the introduction of the plant is due to Mr. Wilson, who procured some live plants at Mengtse, when he was on a visit to me in Yunnan, just before he started on his fruitful exploration of Central China. These living plants were sent to the Botanic Garden at Hong Kong, were nursed there for a time, and ultimately reached Messrs. Veitch's nursery at Coombe Wood. Mr. Hemsley, at the moment of his publication of the species, was of opinion that the specimens he was dealing with were those of a wild plant. After a careful consideration of all the localities where I witnessed the plant growing in Yunnan, I am now of opinion that it always occurs there cultivated or as an escape from cultivation. In support of this opinion I adduce the following facts. The shrubs were always seen growing in gardens or more frequently in hedges or amidst shrubbery in the vicinity of villages; and never were met with in woods or forests. It never set any fruit, propagating itself, however, freely by abundant suckers. The flowers were often seen semi-double and varied much in size, sometimes being quite as small as those of *J. nudiflorum*. Several other species of Jasmine were common in the woods and forests of South Yunnan; and these always produced fruit in abundance and never showed any variation in the size of their flowers or any tendency to doubling.

I have consulted the "Chi-Wu-

* With coloured plate from a drawing by H. G. Moon, at Coombe Wood.



JASMINUM PRIMULINUM

Ming," a Chinese flora, which is rich in details concerning Yunnan plants, as the author was for several years governor of that province and paid much attention to local plants. I have not found, unluckily, any reference to the Jasmine, but was rewarded in my search by the discovery of a picture of *Primula Wilsoni*, which was discovered by me near Szemao, and is now in cultivation at Kew and at Coombe Wood. I am inclined to think that the Yunnan Jasmine is simply a variety of *J. nudiflorum*, which has been imported by the Chinese from the north. The differences between the two plants are slight, amounting merely to an increase in the size of the flowers and of the leaves. Moreover, in the Yunnan plant the leaves have become evergreen, as might be expected from the much milder winter which prevails at Mengtse and Szemao, two places situated practically on the tropic.

I have compared the specimens of the two forms in the Herbarium at Kew, where there are, however, no specimens of wild *J. nudiflorum*; and the leaves, stem, bracts, and calyx seem alike. The only difference lies in the corolla, which is larger in *primulinum*, and its tube appears to be shorter in proportion to the expanse of the limb. *J. nudiflorum* occurs in the wild state in the Tsing-Ling mountains in Shensi, where it was observed by Père David, who reports it to be common on both sides of the range. The species was discovered in 1831 by Bunge, who found it in cultivation at Peking; but he erroneously identified it with *J. angulare*,

Vahl. In 1844, Fortune sent it home from Shanghai, where he found it in Chinese gardens and nurseries. *J. primulinum* may be considered for garden planting as a distinct plant, but it will be interesting to watch it and see if it reverts, when cultivated in colder parts of England or Scotland, to the deciduous habit. That it bears the winter at Coombe Wood is to my mind a confirmation of the view advanced above, that it is really a variety of *nudiflorum*, which is a wild species growing in a region with a really cold winter.

AUGUSTINE HENRY.

ENGLISH NAMES FOR TREES AND PLANTS.

EVEN those who feel the need of English names for garden and woodland things are, perhaps, too apt to assume that the systematic Linnæan name is the only one with any claim to science (*i.e.*, knowledge). But that is clearly an error, as many of our English names are very much older, more interesting, and have been bound up with the history of our people and their language for ages. So that the study of these names may be as much a part of "science" as any other. The botanical names of the system now followed have only been in use during a few generations, and as such they have no more claim to be exclusively "scientific" than many of the names in our own language. In this view we find that we are supported by the opinion of Dr. C. A. Prior, author of a very interesting book on the popular names of British plants:—"There are botanists who look upon English names as leading to confusion and a nuisance, and who would gladly abandon them and ignore their existence. But this is surely a mistake, for there will always be ladies and others, who, with the greatest zeal for the pursuit of Natural History, have not had the opportunity of learning Greek or Latin, or have forgotten those languages, and who will prefer to call a plant by a name that they can pronounce and recollect. We need but to ask ourselves what success would have attended

the exertions of the late excellent and benevolent Professor Henslow among the pupils of his little village school if he had used any names but the popular ones. Besides admitting to the full all that can be urged against them from a purely botanical point of view, we still may derive both pleasure and instruction from tracing them back to their origin, and reading in them the habits and opinions of former ages. In following up such an analysis we soon find that we are entering upon a higher region of literature—the history of man's progress and the gradual development of his civilisation. Some of the plants that were familiar to our ancestors in Central Asia bear with us to this day the very names they bore there, and as distinctly intimate by them the uses to which they were applied, and the degree of culture which prevailed where they were given, as do those of the domestic affinities the various occupations of the primeval family."

THE WOOD LILIES (*Trillium*).

FEW spring-flowering hardy perennials are prettier than the Wood Lilies for moist shaded corners of the rock-garden, or grouping in plots of light, rich soil, sheltered by trees, but where they are not robbed by hungry roots. The best and most vigorous kinds will do in most gardens, save such as are dry or much exposed, but wherever soil and aspect are unfavourable success depends upon some preparation for these dainty woodland beauties. There are about a dozen wild kinds, most of them found in the moist peaty forests of North America, though some of them spread as far as Japan and through northern Asia to the Himalayas. They thrive best in light cool soils, rich in humus, some kinds growing well around bogs; where they are planted upon heavy ground it should be improved by a rich dressing of leaf-soil. When well planted they need little care and may remain undisturbed for

years with only a mulching of decayed manure or rotten leaves in autumn. Imported roots are often a year or two in settling down in their new quarters, but once started they spread into tufts which become increasingly beautiful in size and vigour, and by planting varieties of colour the most charming woodland effects may be gained. So grouped, the drooping flowers are best seen upon a gentle upward slope, and if in a sheltered nook or hollow the early kinds are less likely to suffer from cutting wind. The large white kind (*Trillium grandiflorum*), the best and most easily grown, will bear more sunlight than most, and often does well amid masses of Rhododendrons, but if too much exposed its beauty suffers. Though moisture-loving plants they are unsuited to low heavy land, where stagnant water is against them, as are also the severe winters, which cause check in some districts.

Culture.

All the kinds should be planted early in September, the roots starting into growth with the first freshness of autumn; old tufts may then be divided and replanted at about 4 inches deep in rotten leaf-mould—their natural food. The leaves show above ground in early spring, and though quite hardy they gain by protection from wind and slugs, which often mar the earliest blossoms; their graceful three-petalled flowers borne singly upon drooping stems, last long in beauty and after flowering the plants go to rest for the summer, but must not suffer for want of water in times of drought. Some kinds grow well and are easily managed in pots, and where they refuse to do in the open

their flowers may be enjoyed in this way in a greenhouse or under cold frames; but as hardy woodland plants they are seen at their best amid wild surroundings, and, where possible, plant-lovers will prefer this natural way of growth. Another reason is that the smell of Wood Lilies is unpleasant in confinement, especially towards evening and in wet weather, and this unfits them for most rooms or conservatories. The Trilliums (Trinity Flowers) owe their name to the peculiar threefold arrangement of their parts—leaves, sepals, and petals. The following kinds are distinct, but some of them are rarely seen in gardens, being more interesting than showy:—

NODDING WOOD LILY (*T. cernuum*).—A small-flowered kind bearing white drooping flowers during April and May. A plant of strong growth, with stout stems of 18 inches in clusters of two or three, and broad but very variable light green foliage. A pretty plant of graceful habit.

PURPLE WOOD LILY (*T. erectum*).—A robust and easily-grown kind with spreading flowers of dusky purple in May or June, which for effect should be grouped in contrast with other sorts. The solitary stems about 12 inches high, with broad leaves 2 to 6 inches wide, are stout and erect, and the plant thrives in wetter ground than most throughout Canada and the Northern States, and for garden purposes is the same as the Wood Lilies of Japan and northern Asia. Grows well in pots. **VARIETIES:** Seedling forms differ in colour, giving rise to several varieties; *album*, with narrow petals of pure white contrasted with green sepals and a rich purple ovary; *ochroleucum*, a rarer form

with flowers of pale yellow; *declinatum*, a variety from the Southern States with white or pinkish flowers; and *atropurpureum*, a fine vigorous kind with large flowers of narrow recurved petals, and a deep reddish-crimson or plum-colour. It is rich in contrast to lighter kinds but a little earlier than *grandiflorum*. These kinds are all worth growing and pretty when mingled. Syn. *fætidum*, *pendulum*, and *rhomboideum*.



LARGE-FLOWERED WOOD LILY.

PAINTED WOOD LILY (*T. erythrocarpum*).—This lovely little flower, known as the Painted Lady of gardens, is not easy to establish and shy in flower, but does best upon the shaded margins of a peaty bog or a damp corner among rocks. It comes from cold damp woods high in the mountains of Georgia, its needs resembling those of alpine bog-plants. Its flowers, of about an inch, are white with a red or purple streak at the base of each division, coming during May and June, and followed by bright red berries. Natural height 1 foot, but rarely seen so robust in gardens.

LARGE-FLOWERED WOOD LILY (*T. grandiflorum*).—The commonest and best kind, and a plant of great beauty when well grown, flowering freely each year during April and May. Old well-rooted plants are often 2 feet or more high, with flowers of 3 inches, usually white, but at times tinged with green or purple, and fading to a rosy colour. Abounds in forests of North Carolina, Wisconsin, and Kentucky, as profuse as the Snowdrops and Anemones of English woods, seedling forms different in size and colour being common side by side. **VARIETIES:**—The form sold as *majus* is only a selection of these large-flowered seedlings or the result of good culture in gardens. A fine coloured form, *roseum*, is very distinct and good as a contrast to the white. Its rosy colour is deepest on the outside of the petals and most masked in its early stages, before the fading flowers of the white take on their rosy hue; its leaves and stems also are deeply bronzed and handsome. Planted in company the effect of the two kinds is charming. They flower well in pots but are unpleasant in smell.

DWARF WOOD LILY (*T. nivale*).—A pretty woodland gem, from 2 to 4 inches high and like *grandiflora* in miniature. Its pure white flowers appear early in April, with leaves often mottled or spotted with purple. The smallest and daintiest of the group, going early to rest. State of Ohio.

PINK WOOD LILY (*T. obovatum*).—A kind with white flowers changing to pink, upon stems 8 to 12 inches high; akin to *T. erectum* and perhaps only a form of it. Rare in gardens but useful for its early flowers.

DUSKY WOOD LILY (*T. recurvatum*).—A plant akin to *T. sessile* and found with it in the woods of Pennsylvania, bearing small stemless flowers of dusky purplish brown, $\frac{3}{4}$ to $1\frac{1}{2}$ inches wide, composed of long recurved petals which are pointed and again narrowed at their base. April and May. Of little more than botanic interest.

WESTERN WOOD LILY (*T. sessile*).—Also bearing stemless flowers of dark purple, composed of long erect petals in beauty early in April, fading later to a greenish colour and lasting long upon the plant. It is not a showy kind, the oval stemless leaves borne upon slender stems of 6 to 12 inches, and marbled in shades of green and dark, being often prettier than the

flowers. **VARIETIES:**—A distinct form of this species from the Pacific coast—var. *californicum*—is finer and well worth growing, blooming in April, with erect white flowers of large size, oftenest pure, but at times suffused with rosy purple or lilac. The broad leaves are handsome, of bright green or finely blotched with dark purple, and the plant is more vigorous, free in flower, and easily grown. A second variety, *Wrayi* (also known as *T. discolor*), is of small account, bearing dingy flowers of green and dull purple with erect petals, their merit being their early appearance; leaves prettily marbled with brown and dark purple. This kind is also found in a deeply maroon-coloured form, *atratum*, with flowers of medium size and mottled leaves.

CATESBY'S WOOD LILY (*T. stylosum*).—A beautiful plant, similar in habit to *grandiflora* and nearly as robust, bearing upon stems of 12 to 18 inches large drooping flowers of rosy colour, with recurved petals, shading at times to deep red. It is hardy, easy to grow, flowering latest of all, in June; known as keeping its leaves long after other kinds. Rare in gardens but well worth growing. B.

TREES AS SOIL-MAKERS.—Trees to a certain extent create their own soil, for, however poor the land may be when the trees are first planted, the annual layers of fallen leaves soon forms a deposit of black mould, between which and the natural soil the roots of the trees are always found in great numbers; the older the wood the deeper and richer the deposit becomes. In the old Beech and other forests of the Continent it is extraordinary to what an extent this leaf-mould has accumulated. If it were not for it, the crops of the same tree could not have succeeded each other on the same ground generation after generation as they have done. Mountains, such as in this country have been almost bared to the rock by constant denudation, are, in the Hartz region, knee-deep in some places with leaf-mould under the trees, and the same may be said of Fir and Spruce woods, in which the fallen Pine-needles have formed a bed of black mould. Tree crops manure themselves and enrich the ground on which they grow—a fact that should never be lost sight of in planting poor lands.—J. S., *Field*.

A GARDENER'S VIEW OF SCIENCE OLD AND NEW.

UNDER the above heading there is a quaint and suggestive article in *The Monthly Review* by Professor Patrick Geddes, bringing to mind in an interesting way the knowledge of older peoples and deprecating the tendency of our own time to think that "science" as regards our own work dates from modern times only. Such thoughts are timely, considering the modern tendency of writers to assume that that is only science which comes into their own little technique:

"There are text-books of science which ascribe the discovery of the sexes of plants to this modern botanist or to that. In the popular mind this is mostly associated with Linnæus; while some of our botanical historians gravely vindicate the claim of a certain Sir Thomas Millington, of Oxford, in the century before. But the whole desert East has been living upon dates from time immemorial. How did it annually fertilise its date-trees if the sexes of plants were not as familiar as now? And what pilgrim or crusader did not learn this?"

"Proud of our modern physics, our modern microscopy and the rest, we tend to think there was practically no ancient science at all; and even historians too often speak as if science almost begins with the nineteenth century, or, at any rate, with the Renaissance. But we do not speak thus contemptuously of the philosophies of the ancient past. In Plato, in Aristotle, all men recognise the very culminations of grasp and range of thought, of comprehensiveness and subtlety, of truth and beauty."

"Darwin and his followers, in investigating the mysterious processes, yet simple methods, of breeding and selection, have been but recovering fragments of an ancient art; and with art is ever necessarily associated a corresponding measure of science. What is the proof of this? it may be asked. Do you seriously believe, much less expect to maintain, the idea that prehistoric man knew more about such things than Darwin and Weismann, or than the breeders of to-day? Precisely so! This is the point, and one which it only needs a little reflection to make clear. Within our century we have actually developed, and are now in every decade and lustrum more often developing, new forms and breeds of beautiful and useful plants, and sometimes also animals, from common and familiar varieties and species. But we have not as yet succeeded, either in our own day or within the historic period, in developing any important new food-plant or any new domesticated animal. That is to say, each and all of these are prehistoric. We are proud, and deservedly so, in our day of our advance in agricultural as in physical science; but what in both of them put together corresponds to the importance of raising our present cereals from wild grasses, our noble fruits, like the apple, olive, and vine, from worthless crabs? And when we go to the essential plants of other civilisations, to the rice of the East or the potatoes and maize of the West, we find the same origins lost in antiquity. The scholar when he finds written records, the archæologist when he finds a hoard of noble art workman-

ship, is perfectly clear that the people who made and used these things were proportionally civilised; and must not we selectionists, who find these obvious evidences of prehistoric skill, with practical results incomparably greater and more important than are our own as yet—must not we similarly recognise these as evidence of past civilisation? Do we not see that the ancient garden, in which these goodly fruits and herbs were grown, was no mere transient Eden, still less a theologic parable, but a long-enduring place of labour and happiness, of wealth and peace?”

THE SPRING STAR-FLOWER (*Triteleia uniflora*).—One has read with pleasure the article on this bright little flower in the March number of FLORA AND SYLVA. It is too little grown, and anything which will tend to make it more used should be welcome. I notice that it thrives better, especially in cold districts, if it is grown in gravel. One of the prettiest sights I have seen is a group of it in the gravel path in the beautiful garden of Mr. P. Neill Fraser, Rockville, Edinburgh, where it has spread into a mass, all the prettier because irregular in outline. It is close to the wall of the house, and when seen in sunshine one was struck with its beauty, flowering with a freedom not to be seen when in stiffer soil.—S. ARNOTT, Carsethern, by Dumfries, N.B.

GOOD EFFECT FROM SIMPLE THINGS.—It is a constant thought of mine that it is not novelties that we should seek so much as a better use of the many lovely things that we have. I say making “better use”—the best use we must not hope to see—no one can even imagine how much we lose by the stick-about way in which plants are usually set out. Many of the prettiest plants we possess we never see in their true beauty from this cause, and no one can give an idea of the loss because the routine way is in possession. I go in the other way as far as I plant, but though often thinking of the matter I cannot cover half the ground, and so, like many others, left my Periwinkles to take

care of themselves in hedgerows and rough banks, or anywhere among the wild plants. So I never was more pleased than to see pictures made with the small Periwinkle (*Vinca minor*) in the garden of the Villa Urie at Cannes. A wide, sloping bank, half-shaded with trees for about half its area, was covered with the Little Periwinkle in its ordinary form—a level sheet of blue-purple, only broken here and there with wild Hyacinths. The plant is cut over in the summer, and thus it is kept compact and gives colour effect of a kind that so many like, which I have never seen equalled. And though the climate of the district allows of the culture of many more classes of beautiful plants than may be grown in Britain, and though the many gardens about are full of fine things and even picturesque effects, this, as to colour, was the best of all. The effect of other pieces of ground treated in the same way and seen here and there through the trees was equally good. The heat is so great in summer that grass is kept with difficulty, and so the little plant helps to cover the ground. The soil is of a very open, gritty nature, like so many mountain soils, which may in part account for the beautiful mass of bloom. * * *

THE AUSTRALIAN BEEF-WOOD (*Casuarina*).

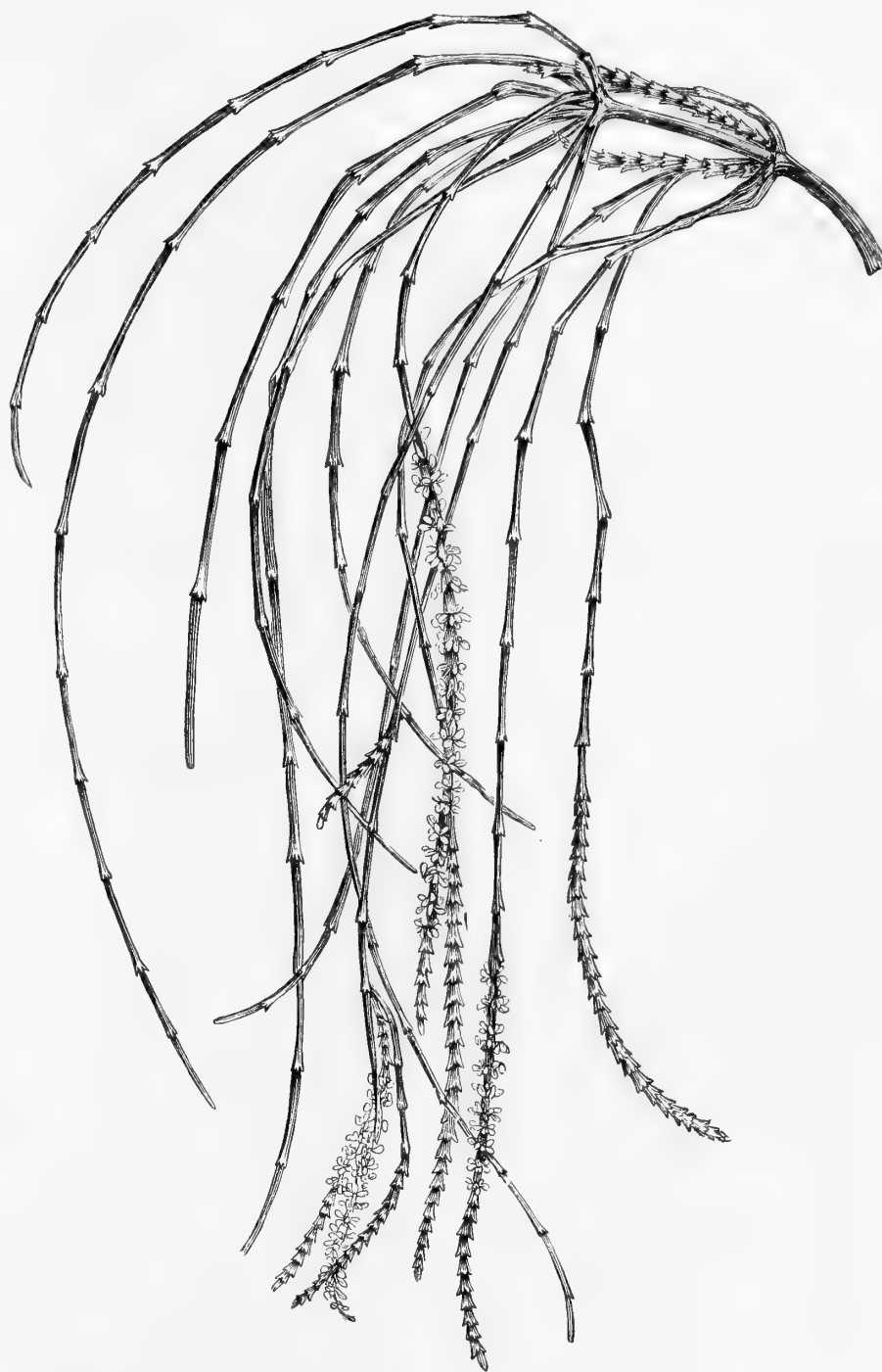
OF the many strange families that make up the vegetation of the Australian continent few are more remarkable than that of the *Casuarina* or Beef-wood. It is in Tasmania in particular that these graceful trees abound, giving a peculiar aspect to many parts of the country with their leafless branches and more or less weeping habit. Something of this effect may be seen nearer home upon the Riviera, where several kinds are doing well in streets and open places, in which only partial shade is sought. There are some thirty species scattered throughout Australia and Polynesia, one kind extending to parts of India. Their name is due to the supposed resemblance of their weeping trails to the arched and drooping feathers of the Cassowary, but in some kinds the growth is erect and tapering, with fine needle-like foliage like a Pine. All are remarkable for their rapid growth, amounting to many feet in a season, the largest kinds reaching a height of nearly 200 feet. The commonest and one of

the most remarkable is *C. equisetifolia*, so named from the resemblance of its floating, leafless cords of verdure to the plumes of the Horsetail, common in English ditches. These wisp-like trails of greyish green are jointed in just the same way and float in ceaseless response to every tremor of the atmosphere. Sometimes the effect of these trees is described as funereal and depressing, but this must be from some morbid trait in the individual, for the shadow cast by quite a large tree is only veiled sunlight—a curtain of quivering sunbeams—and the gentle murmur of the floating tassels so magnifies each passing breath, that their influence is rather soothing and refreshing, suggesting more of a breeze than the reality, with just enough of shade to avoid risk in a climate where the sun may scorch and the wind chill at the same moment.

Their economic value is great, as they do well in poor, brackish, and even alkaline soils, and are used to secure shifting sands upon the sea-shore. Though of quick growth their wood is hard, heavy, and lasting, deep red in colour (from whence the name Beef-wood), good as fuel, and useful in many industries. To the botanist they represent a survival of what seems at some remote period to have been a prevailing type of plant growth. The sexes are apart in the Casuarinas, with flowers appearing during autumn as small and insignificant tassels, though from their number the male tree seems tinged with bronze, and the female with red, as the wind tosses their spray. Upon seed-bearing trees the flowers are followed by oblong or rounded cones of various sizes, often quaintly marked and cut

as though to a fixed pattern. The group is classed near the Walnut or Hickory tribes, but their real place is as uncertain as their features are distinct.

In British gardens they are sometimes seen in the greenhouse, for their quaintness and



BEEF-WOOD TREE (*CASUARINA EQUISETIFOLIA*).

grace, so different from other trees. Good specimens may be quickly grown from seeds or cuttings of half-ripened shoots, and where there is head-room and space sufficient, their beautiful weeping effect is unequalled.

PACKING OF PLANTS AND FLOWERS.

THERE are few lovers of flowers and plants who do not require at times to send some of them by post or rail, and at such times the best way of packing is often overlooked. It is so disappointing to receive beautiful blossoms battered and destroyed in the post, or plants sickly through bad packing, that brief notes upon such work may be useful. After a trial of many methods the following have been adopted by the best packers:—

For Plants. Large and heavy things require special care; the best way of packing such small plants as are usually sent by post is to fit them closely into long, narrow boxes of light wood. No packing material is required, save a little damp moss wrapped around each ball of roots and secured by a few twists of fine thread. A kind of shallow trough is then made at each end of the box to contain these root-masses. This is done by fitting a stout wooden stay as thick as the finger and cut to measure from side to side, held firmly in place by tacks passing through from the outside of the box. A layer of plants is then laid in, their roots wedged firmly together (with more moss if need be) in this shallow trough; they are then secured by a second stay fitted close and nailed like the first, which holds the root-mass firmly in place and prevents displacement even under rough usage. Successive tiers may be arranged until both ends are full, the stems and foliage, free from the “collar,” mingling unfettered in the centre of the box, which becomes a sheltered air-chamber in which the plants travel without any of the crushing or heating inseparable from *close* packing, however carefully done. At the end of a week, if need be, such plants will lift out as fresh as when packed, provided, of course, that they receive sufficient water at the outset. It is well to distribute the weight evenly between the two ends, a well-balanced box being better to handle than when the weight is at one side only.

For Flowers. Though the same method can be used for large and clustered flowers, such as Rhododendrons, Chrysanthemums, and other heavy things, which are sure to bruise and be crushed out of

shape if closely thrust together, the methods used for flowers by the southern growers for export are somewhat different. For long journeys in cold weather wooden boxes are again used, but of a different shape, being broad and shallow rather than long and narrow. Generally, however, the familiar cane baskets are employed, ensuring lightness and flexibility, with a large capacity, the air being excluded by neat folds of paper, stout without, and light and silky for the inner layer. The flowers should be cut before fully open and put in water for several hours previously. In most cases no packing material is needed other than the leaves cut with the flowers and necessary for effect. Blossoms with delicate petals, such as Roses, Tuberoses, Lilies, and Orchids, are, however, best protected by twists of soft paper enveloping each flower. The flowers are then laid in the box or basket in layers, the heaviest at the bottom and around the sides, but as far as possible closely fitted together and each layer separated by a sheet of soft paper. The basket is heaped rather full to ensure that the final pressure of fastening down will secure the whole as one compact mass, excluding air and preventing all movement, even when roughly shaken, as they are certain to be at busy railway centres. In warm weather a layer of damp moss or thick leaves may be used to still further preserve moisture and exclude air, but in the main it is not necessary.

There is an art in unpacking as well as in packing flowers. They should be taken out singly, lightly shaken into their natural form, their stems placed in warm water, and the whole sprinkled lightly overhead and placed under a bell-glass (or even a damp cloth) for some hours in a moist atmosphere and a subdued light. So handled they will revive wonderfully even after days of travel, and last fresh far longer than when this time of recovery is cut short. Some flowers travel better than others, while fragile blossoms such as are easily shaken to pieces or fade quickly at the best of times are certain to fail; still, by giving due care it is wonderful how many flowers travel well and recover fully after a long journey. One of the most used and worst of packing materials is cotton wool; though light and soft, this dries up the flowers and should never be used.



GIANT ASPHODEL AT GLOUNTHAUNE, CORK. (Engraved for "Flora.")

THE GIANT ASPHODELS (*Eremurus*).

THERE are altogether about 30 species of Eremuri which have been introduced to cultivation. They belong to the order *Liliaceæ* and have been divided into two groups, that of *Ammolirion*, where the

pedicels or stalklets of the individual blossoms are adherent or erect, and that of *Henningia*, in which the stalklets are drooping or merely rising. All have been obtained from Asia, but especially from Persia, Turkestan, Afghanistan, and even so far north as Siberia. Many of the spe-

cies are scarcely worthy of cultivation and are only of interest from a botanical standpoint. A few, such as *E. robustus* and *himalaicus*, are, however, noble plants which well repay the trouble expended upon them. Others such as *Olga*, *Bungei*, &c. will prove of value for purposes of hybridisation. It will, however, be to the hybrids, such as the beautiful *E. Elwesii*, that plant lovers will eventually turn for still finer effects than can be obtained from the species themselves. Many raisers are now at work and various hybrids will undoubtedly be introduced showing improvements in size, and form, and colour of flower as compared with the original species from which they have come.

Arrangement. A long irregular row of sixty or seventy Eremuri some 8 to 10 feet high is both striking and beautiful as seen with a background of dark green Pines, which aid in showing up their magnificent spikes of white or rosy flowers. There should, however, be no attempt at regularity in planting or the effect is at once spoilt, but when placed in such a manner as to form a broken though consecutive whole their value is immediately recognised as a distinct addition to landscape effect and an original feature in a garden. Before making suggestions as to soil and planting it may be well to examine briefly the form and structure of the plants. The leafy crown and bloom-spike grow out of a kind of tuber in the shape of a node, below and from which radiate fleshy, fibrous roots in every direction like the spokes of a wheel. These snake-like roots extend fully 4 to 5 feet beyond the

tubers of the larger species, such as *E. robustus*, and we are thus afforded an indication of the distance at which mature plants should be spaced. It is advisable to plant the larger kinds and their hybrids in continuous triangles with 4 or 5 feet between each; the soil in which they are grown must be well prepared and rich. This triangular form of planting will furnish two irregular rows, in the front of which may be placed the smaller sorts, such as *Bungei*, *Bungei seedling*, and *Olga*, &c., in groups of three or five of a sort, and 3 to $3\frac{1}{2}$ feet apart.

Culture and Soil.

From the centre of the crown issues the head, expanding into a dense rosette of leaves, with a central flower-spike. A loose, sandy loam, very rich, and even mixed with stones, so that it be thoroughly drained, will be found the best soil in which to grow the plants. The fleshy roots are thus enabled to run about and find nourishment readily. A close, damp soil, poor and sodden with water, is fatal to the successful cultivation of these plants. It should be rich, for the Eremuri are gross feeders and fond of a warm and sunny situation, to a certain extent protected from wind; though it is surprising to see how the spikes resist its force without any artificial aid. The plants also require a certain amount of moisture during their time of growth, which is rapid, and, as the large heads make their appearance above ground somewhat early in the season, it is necessary to protect them from sharp frost by means of leaves or bracken. M. Mottet, the worthy chief of plant cultivation for Vilmorin, Andrieux and Co., states that

one interesting peculiarity of this group is the yearly renewal of their large tuberculous roots, and from this fact he draws the evident conclusion that the plants must never be moved or disturbed during their time of growth. He adds, that although the plants are seemingly at rest from July to March when the heads appear at the surface of the soil, the period of complete rest does not extend beyond the month of October. Thus we have defined the time during which the plants may be moved without risk—from July to October; though, personally, I believe it better to undertake any such change during the months of August and September. Care must be taken when opening the ground with a fork to avoid any serious damage to the long, snake-like roots, which are very brittle. The plants can be stored dry for a month or two, or planted in their new positions at once. When replanted, the tuber and its roots should be buried about 6 inches below the surface of the soil, the tuber itself resting upon and surrounded by a little coarse sand to secure thorough drainage. M. Mottet deems it best to transplant the roots every autumn, but I have got good results by leaving the plants in the same position for two or three years, the ground around their roots being richly mulched with well-rotted manure in early spring. It is important not to cover the heads themselves with this mulching, as this might induce damping and decay at the neck of the tuber, to its certain loss.

Increase. There are two methods of propagation: division and seed. When the plants attain full vigour

it will be found that they naturally split into two or more crowns, which may be carefully separated after the leaves have died down in August or September. Some of the species seed during fine seasons, and the seed may be gathered and sown; but, unfortunately, it takes some four to six years for the seedlings to develop into flowering plants—yet this is the only means by which the many interesting hybrids now grown can be raised.

R. H. BEAMISH.

Ashbourne, Glounthaune, Cork.

The Eremuri are all Asiatic plants coming from the desert plains of Asia Minor, Persia, Afghanistan, India, and Turkestan, where they grow under peculiar conditions of soil and climate with a fine appearance during their brief season of beauty. In his recent monograph, M. Mottet describes about thirty-five species, classified as follows:—

AMMOLIRION GROUP.

- E. altaicus*, flowers yellow.
- „ *bachtiaricus*, „ „
- „ *Cappadocicus stenophyllus*, flowers white.
- „ *indensis*, flowers white.
- „ *spectabilis*, „ yellow.
- „ *tauricus*, „ white.
- „ *turkestanicus*, „ purple.

HENNINGIA GROUP.

- E. Alberti (Aitchisoni)*, flowers rose.
- „ *albo-citrinus*, flowers white and yellow.
- „ *angustifolius*, „ white.
- „ *anisopterus*, „ white.
- „ *Aucherianus*, „ rose.
- „ *aurantiacus*, „ yellow.
- „ *Bucharicus*, „ white.
- „ *Bungei*, „ yellow.
- „ *Capusii*, „ „
- „ *Elwesii*, „ rose.
- „ *Griffithi*, „ white.
- „ *himalaicus*, „ „
- „ *Kaufmanni*, „ yellow.
- „ *Korolkowi*, „ rose.
- „ *luteus*, „ yellow.
- „ *Olga*, „ rose.
- „ *parviflorus*, „ white.
- „ *robustus*, „ rose.
- „ *Stocksii*, „ white.
- „ *Snowgovi*, „ yellow.

PURPLE ROCK CRESSES

(Aubretia).

THERE are many so-called carpet plants which, as tender exotics, have little value and no lasting beauty, but here we have carpet plants of the finest effect, hardy, easily raised and grown, and enduring for many seasons with only the smallest amount of care. There are good and bad *Aubretias*, and some are of poor, washy colour and not worth growing; but if the best, whether of seedlings or named kinds, are rightly used in broad masses, their constant bloom from spring far into early summer makes them among the most useful of hardy plants. And where will not the *Aubretia* thrive? Scatter a few seeds within the fissures of yon sullen wall and watch its grimness melt away before the springing life, until its sombre face is wreathed in flowers. Or on that sun-burned crest where the bare ribs of Mother Earth stand forth, bare and unlovely, give but a foothold and its garlands drape her nakedness with tender green and folds of vivid blue. See how it ripples, a cascade of colour, from bank and rocky ledge, or how it veils like modest charity the crumbling ruin of a vanished day. Giving much and asking little, careless of cold and happy in the sunlight, never drooping from the storm, but gazing wide-eyed out upon the world, come fair or foul, adorning the mountain solitude or smiling at the cottage door, the *Aubretia* may well be loved of all for its colour, its hardiness, and constancy. It is best seen as a hanging plant and grows better thus in many gardens, particularly those of heavy soil with a large rainfall. Though perfectly

hardy the plant sometimes suffers from wet in a long, sunless winter, when its trailing stems rest constantly upon cold, saturated soil, and the water stands thickly on its dense tufts of foliage. With stems hanging vertically or nearly so the risk of damping is removed, and when in flower the blossoms are not spoiled in the same way by the mingled showers and sunshine of an English spring.

Culture.

No garden need be without its patch of Rock Cress, for no Alpine plant is more easily raised from seed, and many sorts come fairly true. The best-named kinds are grown from cuttings of young shoots about an inch long, made in July; if the plants are lightly cut back after flowering, tender shoots are freely thrown out and root readily where old shoots fail completely. In gardens of heavy soil or where very vigorous plants are desired, it is best to scatter seed during April or early May, in broad patches of several feet, thinning the young plants to 4 inches apart as they develop, and rejecting those of poor colour. Thus they grow on without check, increasing in beauty, season by season, and needing little or no care beyond a little clipping if the shoots become bare. It is not uncommon to find plants of fifteen or even twenty years, grown into tufts many feet across and still vigorous; old plants, however, do not move well and rarely recover. There is difference of practice as to the clipping of *Aubretias*, some gardeners preferring to leave them alone, while others pass them all with shears or scissors after flowering. In such matters local expe-

rience is the true guide, for there are dry spots in which the long stems of old plants lose freshness, which is best renewed by topping them; in others with a moist atmosphere, the plants never suffer in this way, and grow too dense if cut, with bad results in a wet season. To spare the plants, it is well where seed is not wanted to clip off the withered flowers, and this often results in a crop of young shoots suitable for cuttings. In heavy soil it is a help to raise the shoots from the damp ground upon a bed of light stone or broken clinkers.

Their Use for Effect.

There is now a good range of colour in the Aubretias, from pure, rich purple to mauve, rose, and pale flowers approaching white. According to their shade of colour they may be grouped with charming effect among Wall-flowers of rich red and yellow, clumps of Daffodils, Narcissus, and others of the legion of spring bulbs, or they may be mingled with tufts of Rockfoils, Sandworts, and other Alpine plants in the rock garden. A deep coloured kind varied with little colonies of Hutchinsia is very pretty. For edgings to plant borders the more compact and upright kinds should be used, such as *A. Campbelli* and *purpurea*, in mauve and purple, and *A. Leichtlini* in rose. An attractive spot to clothe with these purple hangings is the face of a sunk fence, with a backing of good soil behind. I call

to mind such an one, bordered on either hand with a solid bank of purple flowers, stretching away in a long winding vista, spanned here and there by an arching pergola, with just enough of variation to prevent monotony, and wondrously beautiful in the mingled play of light and shade; yes, and a second, marking the entrance to a wayside house-of-call, to which the passers throng—who knows how largely for the joy of passing in review those sheets of colour which otherwise were banks of naked soil.

As to Kinds.

There has been some advance with the Aubretia of late years, and many named kinds, mostly seedling forms of *A. deltoidea*, are now offered; in fact, there are more



AUBRETIAS IN THE ROCK GARDEN.

names than distinct kinds, though some fine seedlings have been raised. These garden varieties are of greater value than the seven or eight wild kinds of doubtful distinctness, and probably only forms of one species. In our brief descriptions we therefore neglect artificial distinctions between kind and kind. Since all

may raise and name their own *fancies*, it is impossible to trace every *Aubretia* now named and grown, but the following list includes the best known of wild and garden kinds alike:—

A. antilibani.—A kind with small flowers, the whitest of the group. A native of the mountains of Lebanon; of little garden value.

A. Beauty of Baden.—A fine seedling raised by Leichtlin, with very large semi-double flowers of light rose, good habit and fine colour; one of the best.

A. Bougainvillea.—A pretty kind of compact habit, with short stems, simple leaves, and a profusion of neatly rounded flowers of light violet-purple, with dark veins and a yellowish eye. Useful for edgings and good in colour.

A. Bridesmaid.—A new seedling raised by Messrs. Barr, with large flowers of soft rosy-pink paling to blush; good in habit and distinct in colour.

A. Campbelli.—A kind grown under several names, in forms too near to distinguish. A vigorous grower of neat compact habit; pale mauve flowers variable in size, with petals arranged crosswise in pairs.

A. cilicica.—A plant of lax habit, with broad grey-green leaves; late in blooming.

A. columnæ cælestis.—A neat tufted variety with pale bluish flowers from the Italian mountains, but too near *Campbelli* and *Mooreana* to be distinct. Syn. *A. italica*.

A. conspicua.—A kind of loose habit, grey-green foliage, and flowers of deep colour, evenly rounded.

A. croatica.—A geographical form of free trailing habit, with flowers of a pretty pale mauve set crosswise. Croatia; often classed as a species.

A. deltoidea (PURPLE ROCK CRESS).—A mountain plant widely spread from Italy to Asia Minor, freely seeding, and parent of many garden forms. Leaves grey-green with deep indentations and small bluish-lilac flowers upon stems of 2 to 4 inches. The variety known as *deltoidea grandiflora* is too near *Campbelli* to be called distinct. A form with variegated leaves is sometimes grown. Syns. *canescens*, *floribunda*, and *integrifolia*.

A. Dr. Mules.—A new seedling, and richest in colour of garden forms. It is a robust plant, with foliage of bright fresh green and abundant flowers of rich glowing purple, opening from the middle of April, and beautiful among grey rocks. For purity and depth of colour the finest of all; best seen when screened from strong sunlight.

A. edentula.—A wild form from the mountains of Kurdistan, with small pale flowers faintly tinged with pink.

A. erubescens.—A wild plant of mere botanical interest from Greece.

A. Eyrei.—A good free-branching kind with large long-shaped flowers of deep violet; effective as a trailer.

A. Fire King.—A seedling akin to *A. Leichtlini*, but deeper and less pure in colour, with rounded magenta flowers and bright green foliage.

A. Froebelli.—A foreign seedling of deep colour, rarely seen in this country.

A. Græca.—A form of *deltoidea* from the Balkan peninsula, of compact growth yet neatly vigorous, spreading fast, and early in beauty. Free in flowers of light purple with narrow petals set crosswise, threaded by dark veins, and with an eye composed of white anthers; leaves narrow and grey-green. Very hardy and fine for massing.

A. Græca superba.—A selected form with flowers deeper in colour, and a long season of beauty.

A. Hendersoni.—A mere selection of *Campbelli*, and often not distinguishable from its *improved* form. Large flowers of rich violet-purple fading to reddish, with a light centre and petals set crosswise; fine in colour at its best, with a loose habit and very free. Good in masses.

A. lavender rose.—A French seedling with flowers of rosy-lilac.

A. Leichtlini.—A fine kind with large flowers in shades of crimson, the purest and best of its colour. Dense in growth with erect habit, and very pretty as an edging; flowers freely from the end of April.

A. Leichtlini rosea.—Useful at its best, but not equal to the last, while seedlings of bad colour are often sold under this name. A robust plant and a good trailer, but smaller in

flower, with a dark eye, and petals set wide. The flowers often show several shades of colour at the same time.

A. intermedia.—A minor botanical form from Greece.

A. Kotschyi.—A kind collected by this botanist in Persia, and interesting as the most easterly form yet reported.

A. libanotica.—From the mountains of Syria (and often regarded as a species), growing in dense downy tufts, with leaves fringed with hairs and small palid flowers, white in the centre, but of little beauty.

A. Lilac Queen.—A seedling of free robust growth and long stems, bearing flowers of shaded lilac inclining to mauve; somewhat straggling in habit.

A. Mooreana.—For garden purposes identical with *Campbelli*.

A. Moerheimi.—A pretty and distinct kind with good habit, and very large flowers of pale rose-shaded mauve with a greenish centre, and paling with exposure. Stout grey foliage, and a long season of flower.

A. olympica.—A plant from the mountains of Bithynia, with pretty flowers of soft lilac, and coming very near *Eyrei* in its darker forms. Free and good in colour.

A. parviflora and *A. Pinardi*.—Botanical forms from Persia and Asia Minor respectively.

A. Pritchard's A1.—A fine dark seedling of good habit, and very large flowers of deep violet-purple, much veined; leaves large and of bright clear green. This new kind recently gained an award of merit, but its effect has yet to be seen when massed in the open. Promises well, but hardly equal in colour to *Dr. Mules*.

Purple Robe.—A seedling of free habit and showy purple flowers.

A. purpurea.—One of the oldest of garden kinds, running through seedling forms into *violacea*. A plant of erect habit, with broad deeply-toothed leaves and leafy stems, bearing large purplish flowers. Forms of this are grown with leaves variegated by white and yellow.

A. Royal Purple.—A seedling raised by Messrs. Barr, with abundant flowers of bright reddish-purple.

A. Souvenir of William Ingram.—A seed-

ling with very large flowers of rosy magenta shaded to a whitish centre, the colour paling and the petals reflexing with age. Free and good in habit, with narrow grey leaves deeply cut, upon stout rambling stems of rosy red. A good plant where this colour is desired.

A. taurica.—A distinct kind, very dwarf and compact in its growth, which is compressed into neat rounded tufts. It spreads slowly, needing full sun and a dry corner, being sensitive to wet. It loses its leaves in winter but is quite hardy and the best of all in habit, happiest when sheltered within a sunny fissure. It flowers rather late, with small rounded blossoms of deep violet with a distinct eye. A white flowered form is known as *alba*.

A. violacea.—A good early kind, with large flowers of deep violet-purple fading to reddish-violet. It is free in seed, yielding many seedlings with flowers of a reddish colour.

A. W. Marshall.—A seedling from *Leichtlini*, with flowers of deep reddish-purple.

HIMALAYAN RHODODENDRONS IN THE NORTH OF IRELAND.—I am sending some flowers of *Rhododendron Thomsoni*, a fine bush of which is growing in the spring garden at Castlewellan, and has been a magnificent sight for the past couple of weeks—the deep blood-red coloured flowers almost dazzling to look at in the sunlight. The plant is 11 feet in height and 37 feet in circumference, and is bearing 380 trusses of flowers having nine flowers to the truss. It is growing in deep rich peat soil in a well-sheltered southern exposure and is in the most robust health. The following varieties of Himalayan Rhododendrons have also been flowering very freely in the same garden for some weeks past:—*R. Aucklandi*, *R. barbatum*, *R. campanulatum* and its varieties, *R. calophyllum*, *R. campylocarpum*, *R. fulgens*, and *R. niveum*. Some of these are larger than *R. Thomsoni*, especially *R. niveum*, which is very fine. Most of the Himalayan Rhododendrons will stand as much severe weather as *R. ponticum*, as they are very seldom injured by frost, and deserve to be more extensively planted as they come into flower several weeks before the hybrids. Shelter from storms they do require, as the foliage gets badly broken by rough winds.—T. RYAN, Castlewellan.

LÆLIA PRÆSTANS AND ITS VARIETIES.*

SOME confusion has arisen from the classing together of *Lælia præstans* and *Lælia Dayana* as mere varieties of *L. pumila*, although the plants are totally distinct from each other. As imported plants of *L. pumila* are often sold for *L. præstans* it may be well to draw attention to the main features that divide the two plants. In *Lælia præstans* the structure of the lip (or front lobe of the labelum) is trumpet-shaped, with a distinct curve on the lower sides and not straight as in *L. pumila*; the convolute side-lobes overlap at the margin, and are so stiff in texture that they cannot be spread out without splitting. The petals and sepals are very similar, but do not as a rule lie quite so flat as in *L. pumila*. The plant was first imported from Santa Catherina, and named by Rachenbach in 1857. Several distinct varieties have been imported of late years, and one of the most striking of these is the Oakwood variety shown in our plate. The deep blue lip is in fine contrast with the orange-yellow of the throat, while the raised lines and curve at the base of the tube are clearly defined. There is also a delicate blue shading suffusing the light sepals and petals, which are otherwise like those of the typical form of *Lælia præstans*—also shown in its colouring of rosy crimson.

Culture. These plants of the *Lælia pumila* group are all autumn-flowering kinds, coming into blossom at a season when few other orchids are in flower and lasting long in

beauty. When well grown no *Lælia* gives better results than *L. præstans*; importations are frequent, and the plants may be bought at prices within the reach of all growers having the necessary conditions. They do well in shallow pans or in teak baskets, suspended near the glass, where they thrive best and display their flowers to the fullest advantage. They resent too much soil about the roots, so when dealing with imported plants it is well to select baskets just large enough to contain them comfortably. The best compost is a mixture of equal parts of fibrous brown peat and chopped sphagnum moss, giving abundant drainage, and making the compost firm about the roots and rhizomes. When well established it is a mistake to re-pot, unless made necessary through the plant outgrowing its quarters or the decay of the basket. An annual dressing and partial change of compost is all that is needed. *Lælia præstans* and its allies are cool-growing kinds and may be grown with the *Odontoglossums*, but I find they do best when grown in a cool intermediate house with a minimum temperature of 55 degrees throughout the year. Where this constant intermediate temperature is wanting good results may be got by placing them in a warmer house as they begin to grow, until the flowering season is passed and their growth matures; they may then be returned to the cool house for the dormant season, when little water is necessary save just sufficient to keep the pseudo-bulbs and foliage in a plump condition.

H. J. CHAPMAN.

Oakwood, Wylam-on-Tyne.

* With coloured plate from a drawing by H. G. Moon.



LÆLIA PRESTANS OAKWOOD. VAR

THE VIBURNUMS.

FEW classes of hardy shrubs have been neglected so completely as the Viburnums. Save for a few well-known kinds they are almost unknown to planters and gardeners, spite of their hardiness and the beauty of many kinds in leaf, flower, and fruit. Even the common sorts are more valued for forcing than for the good use that may be made of them by massing at the waterside, or in groups large enough to secure the finest effect. In America planters are alive to the value of the many beautiful kinds so freely scattered throughout Canada and the States, and wide use is now made of the best kinds in parks and pleasure grounds. But, in addition to these western forms, many good kinds have also come from the far East, and recently Messrs. Veitch have added to the number of Chinese and Japanese Viburnums new plants unlike any hitherto grown, while Messrs. Gauntlett of Redruth have sent us beautiful flowers of the fine Japanese kinds grown in their nursery.

As Garden Shrubs.

The Viburnums constitute a large group of about a hundred species and many varieties, spread over the whole of the northern temperate zone, embracing the whole of North America from Alaska to the tropics, all of Europe, and the north of Africa, more rarely across Asia, till they again become abundant in China, Korea, and Japan, stretching even to the mountains of Java. It is not strange that plants with such a world-wide range should offer kinds suited to almost every condition of plant life. They are in the main careless as to soil or aspect, but do

best in moist and open spots, though kinds may be found to do well in poor dry soil, among rocks, or even beneath other trees. As a class they thrive upon chalky soils, growing with a vigour and luxuriance which is very welcome where such land prevails and many other shrubs fail. Beside the well-known Snowball Trees of Europe, China, and Japan (*Viburnum Opulus*, *macrocephalum*, and *plicatum*), and the cherished winter clusters of the Laurustinus, many other sorts are beautiful in flower — *dilatatum*, *dentatum*, *molle*, *prunifolium*, *rufidulum*, *Sieboldi*, *tomentosum*, and others, being good in this way. Many again are very bright and pretty in their fruits of scarlet, blue, or glossy black, often hanging long upon the branches, and in two or three sorts of use as food. Not a few are good in the colour of their leaves in autumn, in fact well nigh every kind has something to recommend it as the seasons pass. There is, no doubt, a strong likeness in many kinds that would make anything like a collection of varieties wearisome, but these shrubs are so well adapted to all sorts and conditions of ground that there are few gardens but would gain by adding some of them to the shrubbery, selecting those best fitted to the spot and the result in view. For the wild garden, or grouped in open spaces upon a boundary fence, where they may grow and spread as freely as is their wont, few hardy flowering and berried shrubs are more useful, and less subject to disease and insect pests. It is the aim of this rapid review of the group to state briefly the claims of each kind to beauty and usefulness in British gardens, noting

conditions of soil and seasons of best effect as a guide to planters. Few kinds are to be had in English nurseries, but many are easily raised from seed, and a demand for the better hardy *Viburnums* would soon create a supply.

*Best Kinds and
their Uses.*

Most of the *Viburnums* are neat garden shrubs, dense, freely branched, and of good outline with little or no trimming. There is great variety in the shape and texture of leaf, but they abound in shades of bright and cheerful green, glossy and shining upon occasion and often finely coloured in autumn. Amongst the best kinds for autumn colour are *Opulus*, *Wrightii*, *acerifolium*, *furcatum*, *lantanoïdes*, and *Lentago*. They vary in height from a few feet to trees of 30 feet, such as *Lentago*, *prunifolium*, and *rufidulum*. Though with a certain sameness in flower there is much variety in the size and pose of their clusters, from the immense heads of *dilatatum*, *macrocephalum*, and *rhytidophyllum*, through every size, with some held erect and stemless, others arched and drooping; some flat and branched, others rounded and ball-like. The size of flower varies no less, and there are many minor distinctions, such as in *pubescens*, with its long protruding stamens; *prunifolium*, with conspicuous yellow anthers; *cotinifolium*, which blossoms with a rosy tinge; and *phlebotrichum*, with its deep purple calyx. With the exception of *V. lantanoïdes* none of the American kinds bear the showy sterile flowers, but they atone for this by the beauty and variety of their fruits, borne in profusion and often richly va-

ried in colour on the same branch. The handsomest kinds in berry are *Opulus*, *dilatatum*, *tomentosum*, *furcatum*, and *Wrightii*. Most kinds are best grown in damp spots, but *acerifolium*, *Lantana*, *dilatatum*, *pubescens*, *prunifolium*, and *Wrightii* will do well in dry ground, and *acerifolium*, *Lantana*, and *lantanoïdes* thrive in the shade. For waterside planting many kinds are good, and *dentatum* specially fine. Of the evergreen kinds *japonicum* is the hardiest, while *odoratissimum* fills the air with a sweetness such as pervades the gardens of Pallanza on a warm evening when *Olea fragrans* is in full beauty. Amongst the best for all purposes of the lesser known kinds are *prunifolium*, *dilatatum*, *Sieboldi*, and *rufidulum*, but others of great merit may be selected by means of the following descriptions:—

THE MAPLE-LEAVED GUELDER ROSE (*Viburnum acerifolium*).—A low shrub of 4 to 6 feet, from the mountainous tracts of New England and Canada, and very distinct in its broad three-lobed leaves, shining above and downy beneath. The small flowers of creamy white, coming in May and June, are not showy, but succeeded by oval red berries, turning to black-purple when ripe. The leaves turn a rich purplish-crimson in autumn, and the plant will grow in dry, rocky soil or even beneath trees.

THE BUDDLEYA-LEAVED GUELDER ROSE (*V. buddleifolium*).—One of the new kinds introduced by Messrs. Veitch, with long wrinkled leaves like those of the Globe-flowered Buddleya, but densely coated with hairs on the under surface.

THE SIBERIAN WAYFARING TREE (*V. buri-jeticum*).—A shrub from the far east of Asia, bearing whitish flowers and pink or yellowish fruits in early summer, but too like our native Wayfaring Tree to be of value.

THE AMERICAN WHITE ROD (*V. cassi-*

noides).—A robust shrub of 6 to 8 or more feet, found in swamps near the Atlantic coast of North America, or in shaded woods towards the southern states. Its thick leaves of dull green, variable in size and outline, are covered with scale-like scurfy dots beneath, and also upon the stems and leaf-stalks. The yellowish-white flowers appear in loose flat clusters of 4 or 5 inches across during June and July, followed by rounded shining berries of bright pale green, changing from rosy-red to bluish-black when ripening. These fruit clusters are handsome and abundant, several colours hanging together in the same bunch with pretty effect. The plant is much used in American gardens for the wilder parts of pleasure grounds and shrubberies; grown beside water it is beautiful, thriving in wet ground. Easily increased from seed or layers, but seedlings vary widely. Syn. *V. squamatum*.

THE INDIAN WAYFARING TREE (*V. cotinifolium*).—A spreading shrub or low tree reaching 20 feet in height, with grey down-covered branches. Though found at 5,000 to 7,000 feet in the mountain valleys of Nepaul and the Himalayas, it is tender, requiring shelter during our winters, or a place upon a warm south wall. Its young leaves are downy but wear smooth above, and grey and woolly beneath, ovate in shape, and 4 inches long by 2½ wide. The dense flower-clusters of about 3 inches across appear in May or June upon short woolly stalks, the small white flowers, flushed with pink upon first opening, being succeeded by oval berries of bright scarlet in their early stages, which are eaten by the natives of Nepaul. A beautiful shrub for warm districts, with shelter.

THE DAHURIAN GUELDER ROSE (*V. Dahuricum*).—A low spreading shrub of 6 or 8 feet, with grey downy stems and small ovate leaves, toothed at the edges and woolly upon both sides. It is widely spread from Dahuria to western China and is very hardy, thriving best in light moist humus, and covered during early summer with white funnel-shaped flowers in small clusters; these are followed by fragrant oval berries, at first red, but black and sweet to the taste when ripe in September. Easily increased from cuttings of the shoots.

THE AMERICAN ARROW-WOOD (*V. dentatum*).—A bushy shrub with stout erect branches

reaching 15 feet, and beautiful in moist ground, from New Brunswick throughout the States. The ovate leaves are thickly and deeply toothed, pale green, and carried upon graceful slender stems; the leaves carry hairy tufts at the branching veins of their under surface. The flowers are white and thickly carried during June and July when the shrub is at its best; they give place to small rounded berries of bright dark blue, crowned with the shrivelled calyx, and covered with a fine purplish bloom. This shrub furnished the Indians with their arrows. Two varieties are grown in gardens, one with finely variegated leaves, and *lævigatum*, which flowers later and is larger in leaf. A very handsome shrub for damp ground.

THE DILATED GUELDER ROSE (*V. dilatatum*).—A shapely shrub of erect growth, reaching 10 feet, with greyish shoots, hairy when young. A native of China and Japan, it was introduced by Fortune in 1846, and though quite hardy is not common in gardens. Its bright green leaves resemble those of the common Hazel, being pointedly oval and vary much in length, coarsely toothed, with a few hairs on both surfaces. It is beautiful as a flowering shrub, the short-stemmed clusters of pure white appearing in May and June and sometimes spreading into heads 6 inches across. These give place to handsome scarlet berries, hanging for many weeks upon the branches, and making this one of the most showy of hardy shrubs.

THE KOREAN GUELDER ROSE (*V. erosum*).—A slender much-branched shrub, common in Korea and Japan, but of little save botanical interest. Its broad ovate leaves are slightly hairy, and the stems covered with down; the flowers, carried in loose broad heads, open in May and are succeeded by red berries, but with so many finer kinds it has little garden value.

THE EASTERN WAYFARING TREE (*V. fuscum*).—Though a native of the far East this robust shrub is akin to the American Wayfaring Tree (*V. lantanoides*) only more erect in growth. It is not without value in the wilder parts of the garden for its bold foliage, turning a bright red or crimson-purple in the autumn.

HANCE'S GUELDER ROSE (*V. Hanceanum*).

—A scarce plant from the south of China, not long in cultivation and tender in English gardens. It is nearly allied to *V. tomentosum*, but with leaves broader and less indented. A good American shrub—*V. molle*—sometimes does duty for this in gardens, but the plant is neither distinct nor hardy enough to be of much use to planters.

THE COMMON WAYFARING TREE (*V. Lantana*).—A stout shrub or low tree growing 20 feet high, and common all over Europe and in this country, thriving in woods and damp hedgerows, especially upon the chalky soils of the southern counties. Its leaves are large, rounded, finely toothed, and covered (especially beneath) with a scurfy down, extending to the stem and branches; in the autumn this hairy coating turns a dark red, which is very attractive when trees are massed in the wild garden or upon the bounds of a plantation. It is also handsome in flowers, which appear in profusion during May and June as broad flat clusters, the white blossoms succeeded by fruits, at first red and yellow, ripening to a glossy black. It will grow in drier soils than most of the *Viburnums*, and comes freely from seed. Several varieties are grown in gardens, the most distinct being *rugosum*, with larger leaves, deeply wrinkled, and heavier clusters of flower; *punctatus*, distinct in leaf; and a form variegated with white and yellow.

THE AMERICAN WAYFARING TREE (*V. lantanoides*).—A vigorous shrub of spreading or drooping habit, reaching 10 feet, its young branches thickly covered with a powdery coating of hairs. It is widely spread over North America from Canada to Carolina, and common about Quebec and Lake Huron, where it is known as the Hobble Bush. Its leaves are large and broadly rounded, measuring from 3 to 8 inches, with an abrupt tip and a coating of scurfy hairs upon the nerves and stems. The white flowers come in May upon very short stems, and in large heads of several inches across, the outer flowers being enlarged and conspicuous; these clusters give place to bunches of oval red fruits, ripening to dark purple in the autumn. A hardy shrub of free growth, fine in foliage and flower, it merits a place in the rougher parts of pleasure grounds, where the deep wine-red of its autumn colour is also good. Easily grown from layers, the

trailing branches rooting where they touch the ground.

THE TREE-LIKE GUELDER ROSE (*V. Lentago*).—A large spreading bush or low tree, reaching 30 feet, and sometimes trained to a stem with fine effect. It is common throughout North America in woods and moist places, and is an old plant in English gardens. Its broadly oval leaves, pointed, and toothed at the edge, are of deep shining green changing in autumn to varied tints of purple, red, and yellow. The white flowers appear in stemless clusters during May and June, followed by large black berries, bluish with a delicate bloom, pleasant to the taste, and hanging upon the branches for several months. A variety in which the flower-heads have short stems is known as *subpedunculatum*.

(To be continued.)

IDESIA POLYCARPA.

EVEN amid its native forests of the island of Kiusiu, Japan, the *Idesia* is a scarce tree, found in only a few sparse groups, and seen as rarely in Japanese gardens as in those of Europe. Why this should be is not easy to understand, for the tree is hardy, fine in outline and in leaf, and well fitted for use in avenues and for shade around houses. One cause of its slow increase may be that the two sexes are apart in the *Idesia* and good seed scarce when fertile trees are few, but as it may be increased in other ways this would hardly seem to be a sufficient reason for its rarity.

Discovered by the Russian traveller Maximowicz in 1866, it was introduced into Europe by way of St. Petersburg, and shown among the new plants at the Paris Exhibition of 1868. In its native country it is said to reach a height of 40 feet and upwards at maturity, but its habit of growth is such that many years must elapse before the young plants to be seen in western gardens can reach



FLOWERING SPRAY (MALE) OF *IDESIA POLYCARPA*.

anything like this stature. The tendency of the tree is to expand in a low broad head of increasing diameter, while the central stem rises but slowly. This form of growth is due to the abnormal development of a lower bud upon the shoots, which (contrary to usage) gains the mastery, and by diverting growth from the upper part of the branch pushes outwards rather than up. Its beauty, even in bush form, is different from that of most young trees, and on gaining height the effect of its umbrella-head composed of branches springing in tiers at more or less regular intervals, and bearing large leaves upon long, trembling leaf-stalks, is distinct and graceful. The leaves are 8 to 10 inches long and 6 wide, roundly heart-shaped at the base, with a long tip and prominent crimson veins, in fine contrast with the greyish under face of the leaf. Soft in texture and drooping gracefully on their long crimson stems—often nearly a foot in length—the spreading crown of vivid light green is strikingly beautiful. The tree begins to flower at 10 or 12 years old with long drooping clusters (showing life-size in the engraving), which, though not showy, are very sweet and attractive. The greenish-yellow flowers have a dense tuft of light-coloured stamens tipped with bright orange, and their fragrance as of a sweet Vanda draws the bees from far and near. The flowers of the female tree are smaller and give place to berries of orange or dusky red and about the size of a large pea; being dry and bitter they have no value as food, though on first appearance the *Idesia* was vaunted as a new fruit tree. Where

plants of either sex are wanting it is a good plan to graft branches of both upon the same stem and thus enjoy the effect of flowers and berries in their season. To make a tree speedily the plant must be pruned rather closely while young, removing each year the lower branches so as to relieve the central stem, which, thus encouraged, grows stout and erect. Where seed is not to be had it may be increased in spring or autumn from cuttings of the root or half-ripened shoots in sandy loam and gentle heat, but seedlings give the most vigorous growth. It grows freely in light sandy soils, but does not do well in heavy or damp ground, though quite hardy in most places. A variety known as *crispa* bears leaves strangely cut, rolled, and crinkled, but its only interest is as a curiosity.

A fine example of the *Idesia*, which has reached a height of nearly 15 feet in as many years, with a trunk about 12 inches round at the base, is growing in the *Rhododendron* dell at Kew. It is a female and fruits regularly, fertilised by other trees within a short distance; its fruits are described as of dull purplish black, but they are sometimes brighter in colour. This tree has shown itself perfectly hardy. Older and larger examples are probably to be found in some gardens of the south and south-west, and about Queenstown in Ireland, but only in isolated specimens. The *Idesia* is akin to the *Azaraea* of Chili and South America, and classed with them. The tree was named in honour of Ides, a Dutch traveller and botanist in the far East. Syns. *Flacourtia japonica* and *Polycarpa Maximowiczii*.

NATIONAL PARKS FOR THE BRITISH ISLES.

IN a country like Great Britain, one of the best assets of which is its natural beauty—a thing of value not only to the natives but also to the many visitors who come from the colonies and abroad—it is strange that the question of national parks has never arisen, the more so seeing that we have, perhaps, the finest opportunities known for securing them. Were our country like the plains of the Danube or of Burgundy—levels rich in corn and wine—it would be far less easy; but vast tracts in the British Isles are almost useless for agriculture or any kind of industry. Stand in the midst of the mountains of Wales and you see their summits ranging one after the other like the bare rounded masses of great elephants, and without a tree upon them. In Ireland, too, there are beautiful but bare ranges of mountains, often with a lovely seashore, which might easily be secured for all time as national parks. Whatever value they now possess for agriculture, or for any county or local interest, they would afford in no less degree as national parks, though we feel strongly that the best way to treat such places would be to leave them in their natural state. This would mean very little in labour, and certainly no “laying out” in the way of public parks as we know them, with their prosaic and ugly design so destructive of beauty. England is richer than either Wales, Scotland, or Ireland in agricultural resources and in the value of its land for residential use, but even so it has vast districts of great beauty in its moors and mountain land

in the north and its downs in the south, which might, without much sacrifice, be given to this truly national object. One of the greatest gains from national parks would be that they might afford opportunity for planting our native trees in bold natural masses and forests. These should be massed according to their wants as regards soil and elevation, with no setting out or prim fencing, or any like things that are usually thought necessary for the rigid methods of artificial planting, all of which are absolutely needless in a national park. In all the more fertile parts and by streams and in valleys these trees would serve the two-fold purpose of showing their natural beauty and value, and of giving a home to woodland creatures.

The only difficulty would be to prevent such great parks from becoming mere places of public resort, which would destroy all the quiet for the creatures we would encourage in them. This might best be avoided by selecting spots difficult of access and remote from the busy centres. The woods in such should also be closed at certain seasons of nesting and breeding, and the mere sight-seer excluded altogether from certain parts. Anything like the show of formal roads and paths seen in the public parks of great cities should be rigidly avoided. It would be absurd to have hotels in such places. Artists and students might, under regulation, be allowed access to them. They would be an immense gain to artists to whom all “set out” things are a horror; indeed, the value of such places might almost be considered in relation to their value for artists, as in a thickly-

peopled country like ours, the cultivated and residential land is likely to become more and more a sealed book to them.

In the April number of *The Nineteenth Century and After*, in his plea for a national park for Scotland, Mr. Charles Stewart describes the purposes of such a park as follows:—(1) The preservation in its wild state of a large tract of country possessing natural beauty, varied in its character and in its physical features, and combining, if possible, mountain, valley, forest, moorland, lofty peak and rocky glen, greensward and lake, river and burn, sea-cliffs and seashore. (2) The strict preservation in them of specimens of all the indigenous fauna of our country—the red deer, fallow deer, roe deer, hare, badger, otter, wild cat, fox, and the minor quadrupeds, the capercailzie, blackcock, moorfowl, golden eagle, raven, and all the tribe of sea-eagle and sea-hawk, and the lesser native birds and natural fishes. The enclosure once acquired, to be in the words of the Act of Congress when instituting the Yellowstone Park: “for ever dedicated and set apart as a public park or pleasuring ground.” Mr. Stewart points out that there are estates and stretches of country or islands in Argyll, Inverness, Ross-shire, or Sutherland, offering all the charms that could be desired and fringed by sea, by sea-cliffs, and by seashore. The island of Jura (about 90,000 acres in extent) or the island of Rum (about 43,000 acres) would either of them make a noble national park. The enclosure should not be less than 20,000 to 30,000 acres in extent, and 50,000 acres would not be excessive. There are deer forests

in Scotland which range from 40,000 to 80,000 acres; but even with 10,000 acres, if the ground be sufficiently varied, all the essentials for the preservation of big game could be attained. A capital outlay of some £30,000 to £50,000 should buy a suitable place, and very little further initial expense would be needed. The direct advantages would be the preserving intact of a large and wild tract of country of great natural beauty, and of protecting it for ever from the inroads of the speculator or the schemes of the mining and railway promoter for public use, recreation, and resort for all time, together with the benefit to our food supply, to science, and to pleasure, from preserving the wild animals and birds of our country and rescuing them from extinction.—W. R.

RHAPHITHAMNUS CYANOCARPUS.—Finely-flowered sprays of this Chilean Needle Tree have reached us from the rich gardens of Mr. R. H. Beamish, at Glounthaune, Co. Cork. It is a rare plant of much beauty, but too tender for the open save in the most favoured districts. It is one of the neat myrtle-like shrubs common in the extreme south of South America, and needing much the same care as that plant. Its shining dark green leaves, heart-shaped, and about half-an-inch long, are thickly set upon light graceful stems in clusters of three, accompanied by an equal number of sharp needle-like spines slightly longer than the leaves, and to which the tree owes its name. The stems and young growths are covered with soft thick down of a rusty brown colour. The narrow tubular flowers of white and mauve appear round the leaf-axils towards the ends of the shoots, which are free of spines. Though small they are pretty, drooping thickly in clusters of five or six at each point, and not unpleasant in smell. The plant reaches the height of a small tree. Five other species have been described, all natives of Chili, but this is probably the only kind in cultivation.

FLORA

AND SYLVA.

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JULY, 1904.

[Monthly.

FRUIT TREES AND THEIR FLOWERS.

AFTER one of our most beautiful springs as regards flowers, both of woodland and garden—miles of Narcissi, carpets of Bluebells and Primrose, and the bolder charms of the hardier plants—the fairest thing we have seen this year is the orchard beauty clustered near the house at Penshurst in Kent, rank after rank of lovely and varied Apple trees in mid-May, more beautiful than Lilies, or almost any flower, if we take into account the colour of bud and blossom, with their variety of hues the most delicate and refined. It is too much the fashion nowadays to always separate things into “ornamental” and “non-ornamental,” and it is a curious reflection on this, that the most beautiful of all the effects of a garden in a fertile country like Kent should be the things that are not usually classed as *ornamental*, viz., the simple beauty of things grown for use. Although we cannot grow the Fig or the Vine, the Peach or the Apricot, as orchard trees, we have still this great advantage, that as to bloom our hardy fruit trees are more beautiful than those of the south. This is all the greater reason why we should secure that beauty in a higher degree than is general

about the country house. Why the strict separation of orchard and flower garden should be considered necessary in so many gardens is strange when we think of the rare beauty of an old Apple or Pear tree at all seasons, whether for its fine form, beauty of flower, or the autumn colour of fruit and leaf, and this exclusion appears all the more strange when we think that the Date Palm, the Orange, Vine, Fig, and even the Mulberry—trees with far less claim to beauty—are nowhere considered out of place in gardens of the south of Europe, but always as aids to fine effect. Not but that your Provençal is fully alive to the value of his fruits, but all, even down to his Gourd and his Water Melon, he groups picturesquely about his dwelling, valuing their shade and beauty of form.

It is not everywhere that we can pass, as at Penshurst, from a large flower garden at once into walled and sheltered orchards rich with fruit trees; but in many places where like opportunities occur they are neglected. In hardly any case, however, need we be beaten as to soil, because it does not signify whether the orchard is set out on a regular level, as at Penshurst, or whether it occupies a piece of sloping or diversified land.

In fact, it might easily be put on land which, owing to its steepness or other incidents, is useless for any other purpose.

If it were simply a question of beauty alone it would be worth attempting, but there is another gain important to consider (at least in a southern county and in hot years), and that is the shade of these fruit trees which is so well suited to growing many of the finer hardy plants. Stately herbaceous plants, Ferns, Lilies, Primroses, Foxgloves, and many other lovely things do well in this partial shade, as at Penshurst, and also at Warley where there is a distinct and charming flower garden under fruit trees, which give their fine form, light shade, and protection for the plants that enjoy such shelter. Many things do better in this sort of shade than in the open, flowers last longer and, assuming that the soil is a good one—as it often is where orchard trees are grown—their growth is freer. For this purpose tall trees are better than dwarf or half-standard trees: that is, the standard grafted on a free stock, giving height and air, is fully as good for shade as the dwarfer forms, which would be useless where we are to have a flower garden beneath them. They should take their natural forms, nor should any stiff pruning of the usual sort be allowed, the only trimming being the cutting away of cankered, crowded, or worn-out branches.

As to kinds, the Apple tree is the most important, owing to its vivid beauty and variety, not merely of the usual kinds to be found in catalogues, but also the cider Apples, which are hardly ever

planted for effect. Most of the French and our own cider Apples flower late and are beautiful in form and in flower. The Plum, Cherry, and also the hardier kinds of Pears should be grown, but only the kinds that ripen well in our country. The Quince and the Medlar (on a much smaller scale) are pretty in bloom, and there is a host of Double Cherries, Almonds, and Apples, including the Siberian Crabs, which might well come in for flower if we are not satisfied with the kinds grown for their fruit—in themselves an ample host and rich in every charm of colour.

A GARDEN CANTON.—Throughout the long-coming of spring there is one happy corner of Switzerland to which our hearts turn with delight. It is the luminous, the glowing Ticino, where, under the Federal flag, an Italian flora flourishes—a land of flowers, of perfumes, of blue lakes and sunny skies; it is our own Nice, but Nice calm and restful—Nice, without Monte Carlo, with its dust and tumult. The Ticino is the eldorado of the botanist and the plant lover, for there are gardens everywhere, overflowing with flowers and breathing sweet perfume. I have visited it at all seasons, and have never failed to gather flowers, both native and exotic, that were new to me, flowers that one never sees this side of the Alps. In the country about the lakes (in other parts it is not nearly so warm) this vegetation is so richly varied and so luxuriant that one's whole being glows into harmony with the prevailing sense of gladness, till even the saddest of mortals is lifted out of himself and reflects something of the

all-pervading sunshine. For the flowers radiate happiness, while poetry wells forth with every opening flower and budding branch, each shade and leafy dell showing unsuspected charms. Truly, a land rich in flowers is a land full of delights which are apart from all other sources of happiness, and this is true the world over, for only the soulless mercenary (and he is happily rare) is unresponsive to the mystic spell of flowers. And Ticino is truly the garden of Switzerland. Alpine flowers—Rhododendrons and Saxifrages—creep down as near as Locarno; one sees them in bloom even on the rocks of the Madonna del Sasso; flowers too that breathe of the Mediterranean, and which have made it their home for thousands of years gone by; exotic flowers, in garden and park, fine brilliants enriching Nature's beautiful setting, are seen scattered up and down, even in gardens the most modest, and richly lavished upon the fringes of the limpid waters. Those charming gardens of Como and the Borronian Isles, the gardens of Pallanza and Lustra, of Locarno and Lugano, the floral wealth of the entire world is gathered here, but it is the far East, Australia, and North America, which have given most largely. And how shall words do justice to the beauties of those groves of Camellias, blooming from March to May, in the gardens of Locarno? Everyone in Ticino delights in flowers, collecting and caring for them. But all alike cannot share the lovely setting of Locarno, or that of Lugano—the gentle, poetic Lugano—slumbering at the foot of the Salvatore and encircled by a crown of gardens

fully as rich in flower, but not in variety, as those of Locarno, which is nearer the sources of rare plants. But Lugano has something better than mere collections, however rich and rare, better even than the fairest gardens of our dreams; it has the starry slopes of Salvatore, carpeted with Christmas Rose and the brightly-flushing Polygala, with garlands of fragrant Daphne (*D. Cneorum*) and spreading fields of sweet Fraxinellas, which are sheeted in earliest spring with Snowdrop and Snowflake. And Lugano also has its Castagnola, with the ancient trees; and the natural gardens of Gandrid, with old Chestnut groves, beneath whose shade flourish the velvet-flowered *Serapias*; and sunny slopes, crowned with Apollo Laurels and thickets of the white flowering Ash. And from Lugano, by way of Melida and Morcota, one may wander round the foot of Salvatore, returning by the flower-decked valley of Ticino.—H. CORREVON, "Par Monts et par Vaux."

ORCHARD BEAUTY.—Orchards are even more personal in their charms than gardens, as they are more nearly human creations. Ornaments of the homestead, they subordinate other features of it; and such is their sway over the landscape that house and owner appear accidents without them. So men delight to build in an ancient orchard, when so fortunate as to possess one, that they may live in the beauty of its surroundings. Orchards are among the most coveted possessions; trees of ancient standing, and vines, being firm friends and royal neighbours for ever. The profits, too, are as wonderful as their longevity. And if antiquity can add any worth to a thing, what possession has a man more noble than these? So unlike most others, which are best at first, and grow worse till worth nothing; while fruit trees and vines increase in worth and goodness for ages.—*The Orchard*.

THE GREATER TREES OF THE
NORTHERN FOREST.—No. 16.
THE COMMON OAK (*Quercus pe-*
aunculata).

KING of the Northern Forest, from its use, beauty, and associations, it is in all ways the most precious of our native trees. The beauty of the Oak is evident in many parts of our country, differing, too, according to place, its effect in the south, for instance, not being the same as in the midlands, where the trees are more stately though their wood is no better, if, indeed, as good. In chase, or park, or lawn, nothing can be finer than our picturesque sentinel Oaks; but one noble aspect of the tree, not so often seen with us, is its tall forest dignity. Owing to the trees being so often set apart, and to the underwood culture which encourages them to branch out, we do not so often see those superb erect trees such as may be found in the great French forests like Fontainebleau, Marly, and Berçy, where the Oaks are noble in stature as well as in size, and over 100 feet high. Where Oaks are massed in this way the effect of the lichen-silvered stems in winter is fine, and in spring is even better, where the ground is carpeted with Primroses and Ladies' Smocks, Dog Violets, and Wood Hyacinths. To treat of the literature of the Oak in anything like completeness would require a goodly volume; I propose, therefore, to deal only with matters essential in planting and the enjoyment of the Oak wood.

Soil.

The choice of land upon which to grow Oak is important, for neither natural nor artificial

planting will succeed in certain soils. The best soils are cool clays and loams, and the iron-soaked soils so common in the weald of Sussex and in Kent. A deep soil is not necessary if the subsoil is cool. Dry and poor sandy soils are dead against the Oak. Happily there are large areas in which there is the right kind of soil, and many of the poor clays and cold, hungry loams that were broken up in better times might now be well planted with Oak, for this tree is for all time likely to be the most valuable that we can grow. Nothing that the wit of man could devise pays so well as an Oak wood in many districts of Britain. Oak will grow very well on fine rich loams, but the best quality is grown upon soils which, although cool, cannot rightly be classed as good loams. As regards drainage, upon which stress is so often laid, the growth of the Oak is proof to me that drainage is not necessary. In my woods, and in the district around, the Oak is as good in quality as has ever been cut, although the ground it grows upon is saturated in winter and, indeed, for a great part of the year.

*Increase and
Growth.*

If we watch what goes on under a grove of Oaks after a good year of acorns and in places not too much exposed to creatures that store them away, we see a vigour of growth from seed such as no other tree can surpass. These, be it observed, are uncovered acorns, and, seeing this, who need be afraid to take the simple way with acorns? The plan I have practised with success is to scatter acorns over a field of likely ground and then run the plough through the field



GROUP OF OLD OAK WITH SWINEHERD. (Engraved for "Flora" from a picture by Charles Jacques in possession of the Editor.)

to cover up the seed. The acorns will thus be thrown into lines and protected from the birds and other creatures during the winter. They come freely, and, if not severely gnawed by vermin, will be too many, but it is very easy to thin out the weakest. The acorns should be from sound, fair-sized trees—often an easy matter at least in the south, though in the same place we have often found a curious diversity in their size. In districts where rabbits abound it is absolutely necessary to wire, to a height of $3\frac{1}{2}$ feet and not more than a couple of acres at a time, as larger areas are difficult to control. If this is not done the little seedling Oaks will be eaten down (the larger Oaks are saved by their stringency) and several years may be lost; but even then they keep on and in good time get their heads up. There has been much writing as to the superiority of transplanted trees over those raised from acorns, but this is contrary to all the facts of Nature as seen in every Oak wood, where the trees come so freely from seed. Among the various sound reasons for raising Oak from acorns is its economy and simplicity, and also the fact that in the nursery it is not at all usual to find a good stock of the common Oak. An important point is the renewal of existing woods in which underwood has been grown for generations; the Oaks scattered through these are occasionally good but are often spoiled by their spreading heads. As underwood has now ceased to be profitable and its cutting is often a nuisance near the house, it is better to replant the wood with Oak, in which case we shall have to use tall saplings. I plant

saplings of from 8 to 12 feet high, and when they come from good forest nurseries I find they succeed, but they must have been moved often enough to secure a fibrous root. The Oak is said to suffer much from transplanting, but this need not be the case if they have been well prepared for it, and I have planted many thousands of saplings with very slight loss. My replanting is done in the hope of getting back to high woods and killing off the underwood eventually.

Growth. It is a popular idea that the

Oak is a slow growing tree, and, perhaps, the sturdy contorted trees one sees in open places to some extent warrant this opinion; the idea is none the less an error, for the Oak is a rapid grower. Some ten years ago I planted a small field with Pines—the hardiest and most rapid in growth, some of them, like the Corsican Pine, growing 2 feet and even more a year, in favourable spots; in the soil brought by birds and mice a certain number of acorns came up uninvited, and so far these have kept their heads level with the Pines. Some years ago, too, an interesting calculation was carried out upon my own land on Oaks growing in underwood recording the growth of ten years. It showed a yearly increase of from 5 to $7\frac{1}{2}$ per cent.

Wood. It is impossible to enumerate here the vast number of uses

to which the wood of the Oak can be put, from shipbuilding to cabinet making. As fuel it should be more used than it is. According to some books it is less good as fuel than the Beech, but the cordwood cut from Oaks in the spring is excellent for burning. In our country

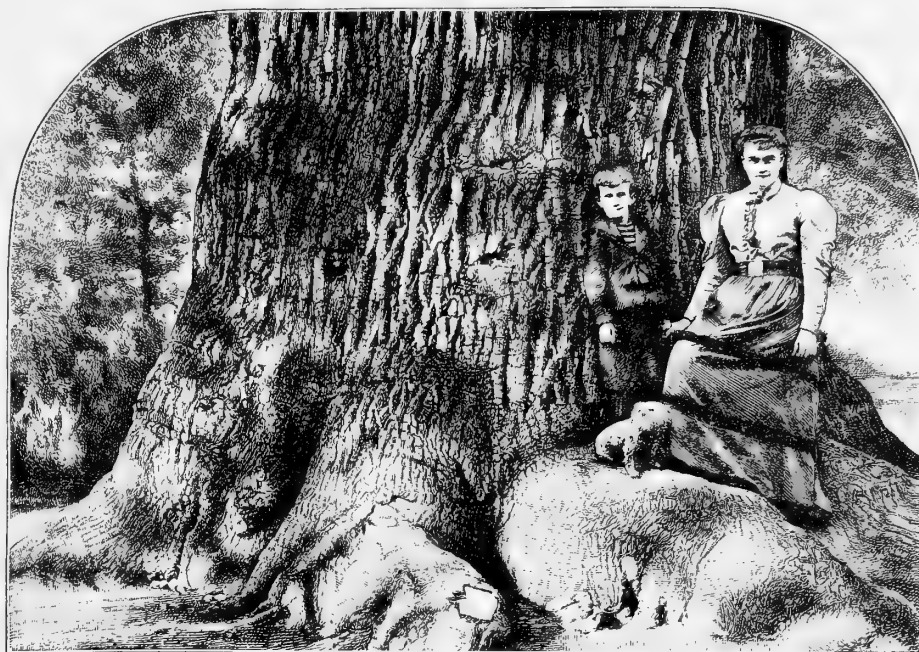
there is an enormous waste of this branch wood, due to our common way of growing the Oak, and it would be well to encourage its more frequent use as fuel. Its charcoal is also of good quality.

Range. The range of the common Oak is a very wide one, extending east to west from the foot of the Urals to the Atlantic Ocean, and from the Sierra Moreña in Spain through Sicily, Greece, Asia Minor, to the southern Caucasus. In its northern range it spreads from Scotland through Norway to northern Russia. Within these limits it is found chiefly in the plains and valleys, but grows also upon the slopes of hills and even among the mountains to as high as 3,000 feet, but this rarely. When in full vigour it is susceptible to severe cold in the spring, often losing its young shoots, leaves and flowers, from late frosts.

*Varieties,
Synonyms, and
References.*

From our point of view it is out of the question to consider here the varieties of our noble Oak. If from some high standpoint we look out over any good Oak district, we may see much diversity as regards time of leaf, colour, and even habit, and for hair-splitting students it would not be difficult from these minor differences to establish "varieties." But that is wholly futile for our purpose. There is a pyramidal Oak, and

there are other forms which might be called "*ornamental*" in the current use of the term. But even from that point of view none of these are half so good as the ordinary tree as it comes from seed. Happily we are not burdened with synonyms, the only confusion likely to arise being from botanical authors classing the other native species as a mere



STEM OF GREAT OAK NEAR DALLWITZ, KARLSBAD, AUSTRIA.
(Engraved for "Flora" from a photograph sent by the Rev. H. Ewbank.)

variety, whereas the experience of foresters is that it is distinct in timber and habitat, and we propose to treat it as such.

The pyramidal Oak, which is sometimes seen grafted in gardens, occurs in some forests as a natural seedling, and is said to reproduce itself freely. In France there is also a late-leaving form which is described as common in certain woods, and might have some importance for very cold countries, as it comes into leaf some weeks later than the common kind.

Those who think that the accepted Latin names of our own day are the only

ones with any pretence to "science" may pause and reflect when they realise the age and use of the name Oak in all northern writings. Thus in early Anglo-Saxon we have *ac* and *æc*, Scotch *aik*, old Norse *eik*, Swedish *ek*, Danish and Icelandic *eyk*, Low German *EEK* and *eik*, German *eiche*, and old High German *eih*.

References to Modern Books.—*Quercus pedunculata*, Willd. *Reich. Ic. Fl. Germ. et Helv.*, Vol. XII.; Billot, *Fl. Gall. et Germ. Exsicc.*, No. 2532. *Quercus ruber*, Sm. *Engl. Bot.*, ed. 1, No. 1342; Leight, *Fl. Shrop.*, p. 473; *Crep. Man. Fl. de Belg.*, ed. 2, p. 267; Mathieu, *Flore Forestière*, ed. 4, p. 345; Laslett, *Timber and Timber Trees*, various notes as to timber; Syme, *English Botany*, ed. 3, vol. 8, p. 145; Ehr. *Arb.*, No. 77; Loudon, *Arb. et Frut. Brit.*, vol. 3, p. 1731; Kotschy, *tab. 27*; Woods and Forests, vol. 1, p. 8; Selby's *British Forest Trees*, p. 243.

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THE YARROWS (*Achillea*).*

IN this large family of northern plants there are many weedy ones unlikely to be of much value in the garden, and no doubt also a few brilliant things not yet introduced. At the same time it would be ungrateful not to say that a good deal of beauty may be had from them in the open garden, both from the tall and showy and the dwarfer kinds, including the silvery-tufted plants of the high mountains, which come in so well for our rock-gardens, narrow edgings, and borders. Most of them are of the easiest culture, thriving in open sandy soils and the more vigorous kinds in heavier ground. Almost all the dwarf mountain species do well in gritty loam, and when planted as they should be, freely as groups in the rock-garden, care should be taken that sufficient soil is given them, for in our lowland gardens many alpine plants, though of the simplest culture, die away from starvation because too

often planted in the smallest scrap of earth. In their mountain homes many of these plants send their roots down to a great depth in the rocky crevices, and draw thence a never-failing supply of food and moisture.

The two plants shown in our plate were drawn from flowers sent by Mr. Gumbleton from Belgrove, Queens-town, both being introductions from the east of Europe. *Achillea buglossis* is a large-flowered form of *A. lingulata*—a plant found upon the mountains of Hungary, bearing small rounded heads of white flowers flushed with pale rose at maturity. This fine variety with its spreading heads of large flat flowers is distinct from other kinds and very useful for cutting, the shaded centre enhancing the effect of the white petals. It grows from 12 to 18 inches high, with a long season of bloom from June into September.

A. clypeolata is a plant rarely seen in gardens, coming from rocky places in the mountains of the Balkan peninsula. It flowers during June and July, upon stout stems 18 inches high, with narrow, much-divided leaves and dense heads of bright yellow, composed of many small flowers tinged with orange in the centre when fully open. Both kinds do best in warm, well-drained soil and sunny spots, the long black roots being quite at home amongst stones and sand.

The Yarrows form a group of many species, confined (save for a very few kinds) to the northern temperate regions of the Old World, extending through-

* With coloured plate from a drawing by H. G. Moon.



1. *ACHILLEA LINGULATA*. VAR. *BUGLOSSIS*. 2. *A. CLIPEOLATA*.

out Europe and Asia from Spain to Java, and commonest from the Balkan region and north-east Africa, through Asia Minor to Persia. Only those kinds of some value from the garden point of view are given here:—

GREEK MOUNTAIN YARROW (*A. ageratifolia*).—A silvery-leaved plant from the sub-alpine districts of northern Greece, with large white flowers like Daisies, carried singly upon stems of 6 or 8 inches, early in summer. The leaves are narrow, tongue-shaped, crimped, and covered with white down. This is a very neat and distinct plant, thriving in light soil. Syn. *A. ageratoides*; also known as *Anthemis Aizoon*.

SILVERY YARROW (*A. argentea*).—A neat and attractive kind, effective from its pretty silvery foliage growing in compact tufts of a few inches, with numerous heads of pure white flowers in June and July. Asia Minor. Division. This plant is now often classed in the allied group of *Tanacetum*.

ALPINE YARROW (*A. alpina*).—An old European plant, first described by Linnaeus but almost unknown in cultivation, though excellent in the rock-garden for its good habit and loose heads of silvery-white flowers.

ASPLENIUM-LEAVED YARROW (*A. asplenifolia*).—One of the few American kinds, growing 18 inches high, with deeply-cut leaves and dense heads of small flowers of white or rose colour, from June until the autumn.

BLACK-CUPPED YARROW (*A. atrata*).—A pretty alpine kind from the mountains of Austria, forming a low tuft of deep green aromatic leaves, with white flowers in August.

WHITE ALPINE YARROW (*A. Clavennæ*).—A dwarf plant of striking appearance with leaves deeply jagged and covered with a short, silky down of silvery white; clear white flowers in summer. It thrives in a light, free soil, often dying out in heavy ground, and is a pretty plant for the rock-garden or borders, effective when massed with such dark-leaved plants as *Trifolium rubrum* or *Ajuga purpurea*. Alps of Austria. Division and seed.

SAW-LEAVED YARROW (*A. decolorans*).—A distinct Swiss plant of about 15 inches, with white hairy leaves regularly toothed, and flower-heads of good clear white. The double-flowered

form of this species comes very near *A. Ptarmica plena*, but differs from it in its more deeply serrated leaves and more rigid habit, and though useful for cutting is yet hardly so free in flower or so good as the Double Sneezewort. Syn. *A. serrata plena*.

THE NOBLE YARROW (*A. filipenaulina*).—A handsome, vigorous perennial, well known in gardens. It is of good habit, about 4 feet high, with large flat heads of yellow flowers, often 5 inches across, coming from July to September and retaining their beauty for a long time. Excellent for groups in shrubbery or border, and useful for cutting. Though often described as a taller form of this plant, *A. Eupatorium* is no longer considered as distinct.

LARGE-LEAVED YARROW (*A. grandifolia*).—A bold plant of robust growth for the wild garden, where, in rich soil, it grows 5 or 6 feet, bearing fine foliage and large heads of creamy white or pale yellow flowers. Asia Minor.

FRAGRANT YARROW (*A. Herba-rota*).—A pretty little plant growing in sunny spots upon the hills of western Europe, with a pleasant herb-like fragrance when touched; low tufts of undivided leaves, and loose white clusters upon slender stems of about 6 inches.

HUTER'S YARROW (*A. Huteri*).—A plant 6 inches high, with greyish-green foliage and pure white flowers in May and June. It likes a sunny part of the rock-garden and grows well in common soil. Freed from the life-struggle in the alpine turf, this, like so many spreading plants in our gardens, is best replanted every second year. Switzerland.

THE ROSY YARROW (*A. Millefolium*).—Though somewhat unruly, this fine perennial is worth a place for its colour in the garden during July and August, growing about 2 feet high and thriving in any soil upon the margins of shrubberies. The best kinds are the light and dark rose-coloured forms of the native plant, which varies much in colour even in a wild state.

MUSK YARROW (*A. moschata*).—A low-growing alpine plant, the leaves of which are woolly and deeply cut, stems sub-shrubby, flower-heads white, 4 to 6 inches high, and flowering from June to August. Europe.

DWARF ITALIAN YARROW (*A. nana*).—A very low-growing species not often met with, yet a very pretty kind for the rock-garden,

though difficult to grow in low districts. Its deep green foliage lies close to the earth in a clustered rosette ; flower-heads white.

DOUBLE WHITE YARROW (*A. Ptarmica fl. pl.*).—A useful variety and perhaps the best known of all, providing a profusion of pure white blossoms upon tall stems throughout the summer. For cutting it is most useful and is perfectly hardy and free in any soil. Various good forms of this plant are now grown, *The Pearl*, *elegans plena*, and *Snowball*, being of the number. Often called by its old name of Double Sneezewort.

ROCK YARROW (*A. rupestris*).—A pretty and early-flowering evergreen kind from Calabria, forming a low white-flowered tuft of a few inches ; thrives in poor soil upon warm banks, and is among the best of the dwarf kinds.

TRAUTMANN'S YARROW (*A. Trautmanni*).—A pretty species from Austria, with umbels of white flowers 6 to 8 inches high. Of tufted growth, with long and very narrow leaves of deep green, and white flowers.

THE SIBERIAN YARROW (*A. sibirica*).—This kind bears many elegant white blossoms early in the season, attractive by reason of their purity, and most useful in the border or for cutting. It is 2 feet high, of easy growth, and less rambling at the root than many kinds. Increased by division. Siberia. Syn. *A. mongolica*.

DOWNY YARROW (*A. tomentosa*).—A tufted, trailing rock-plant, with evergreen woolly leaves and flat corymbs of bright yellow flowers from June to August ; in poor soil it spreads as a dense green carpet, but in rich ground is often 12 inches high. The best of all the yellow-flowered kinds, it is a good plant for the margins of mixed borders in ordinary soil, but not in wet places, doing best upon sunny banks or even upon dry walls, where it is sometimes used with fine effect. Division. European Alps, and rarely in Britain. Syn. *A. aurea*.

EGYPTIAN YARROW (*A. Tournefortii*).—A silvery plant 18 to 20 inches high, with finely cut leaves and handsome heads of yellow flowers, and much of the grace of a fern in its appearance. A native of the East, it is not quite hardy on heavy soils but survives in well-drained sunny spots, flowering in summer. Division. Syn. *A. Ægyptica*.

PALLID MOUNTAIN YARROW (*A. umbellata*).—A dwarf alpine plant, pretty all through

the season from its silvery deeply-lobed leaves, best seen upon warm banks or dry walls ; its white flowers are of small account, being few and inconspicuous against the glistening white foliage. It is a Grecian species, of easy culture in light soil ; increased by division in spring.

GOOD COLOUR FROM THE ROCK-GARDEN.

ALTHOUGH in their native lands there is no colour more beautiful than that of rock and Alpine plants, owing to various causes their full value is seldom shown in gardens. The common way of making what is called a rockery prevents all breadth of grouping ; the puerile idea that a rock-garden is made by standing stones on end is against all effective planting ; you cannot get plants into natural colonies in that way, and the "pockets" prevent them from taking anything like their usually prettyspreading habit. The great majority of Alpine plants do not want pockets ; they want to be raised above the level in order to escape the surface water ; they enjoy having their roots behind stones, but they no more object to a flat surface or gentle slopes than grass does, as may be seen upon the Alps in all directions. If people would put their rocks in simple ways instead of exposing their sides like milestones, it would be much easier to group well and get the full effect of the colour of the mountain flowers. Another mistake long rooted in our habits and which spoils all the mixed borders in the land, is the common way of placing dots instead of easy groups, putting cultivation or good effect out of court. Hence, although we may secure much of the individual beauty of the plant seen close at hand, we do not get the

true colour effect, which is the most subtle charm.

Beauty of Grouping.

In the rock-garden at Swaylands in Kent, made by Mr. Drummond in a very spirited way, we saw much that reminded us of good rock-plant colour lately, and there were some very impressive effects from the Gentians, Rocky Mountain Phlox, Purple Rock Cress (*Aubretia*), and rock-shrubs that flower at this season. No other plants specially put out for their show of colour could have given such brilliant effects, and we feel sure that owners of rock-gardens might get far more enjoyment from them if they adopted these simpler ways of grouping. We do not say that only one kind of plant should be used in a given spot, for two kinds sometimes intermingle with pretty effect—as they often do in their native haunts—but the great thing is to get broad groups of

Broad Groups.

each plant, whether it be Alpine Heath, or the Purple Rock Cress which flowers for three months in the spring, or such plants as the common Woodruff, which group themselves if we let them. Ten kinds well used are more effective than a hundred species as commonly set out. The plants that may be used are numerous, and their colours refined and beautiful in the highest sense. Beside the true rock-plants there are many dwarf shrubs like *Helianthemums*, some of the smaller Roses, and mountain shrubs generally, that lend themselves to fine effect in colour.

Other Advantages.

It is not only beauty that we get, but also helpful

simplicity in cultivation; for, clearly, if we have to make changes when a plant gets tired of the ground or for any other reason, it is far easier to deal with visible masses than with scattered dots. Another point is, that with the feeble dotting system in use, the weeds take possession of the bare ground, whereas many of these mountain plants, if allowed to spread into groups, unite to keep the enemy out. In every way, therefore, the rock-garden is much more easy to manage where the dotting system is set aside. There remains the question of getting enough plants to secure this effect, and happily most things in common use are readily increased by cuttings or division. Rockfoils, for example, which are so useful, are easily increased to any extent by division; the little American Phloxes also. The *Aubretias* come freely from seed or cuttings. It is only the rareties which may be difficult to increase; most things of free growth, as rock-plants, are of quick increase by simple means.

Coarse Plants.

Coarse plants are too often seen, flowerless, too vigorous, or without beauty of colour; these should be removed to the herbaceous borders and the wild garden, or elsewhere—not only because of their ugliness, but as being apt to exhaust the ground near fragile plants, robbing them of moisture and light, or actually overgrowing and killing them—a common sight on neglected rock-gardens. Plants growing upon *moraines* or cliffs are not overfed, but at least they have not to fight with the vigorous herbs one too often sees on rock-gardens. These also help to mar the colour of the rock-

garden, breaking up masses and giving a very un-Alpine look to the scene.

*Repetition fatal
to good effect.*

The repetition of the same thing all over the rock-garden is the surest way to destroy harmonious and right colour. If we are fond of Yellow Alyssum, or any other showy plant, let it be on a bank or wall in a bold way in one place; or, if it is a plant we are very fond of, we may even have two or three groups of it in different aspects, but if scattered all along the same line of view the result is fatal to any harmony of colour. Again, harsh contrasts should be avoided, seeking rather gentle and harmonious effect. The grouping and massing should never be stiff; masses might run one into the other here and there, and need not always be confined to plants of one sort. Things of like stature and character might at times be allowed to run together, any hard and fast rule being against good work in gardening as in art. The making and keeping up of a good rock-garden is a costly thing, and the least return that can be expected by those willing to incur the cost is to get the full colour value from the plants.

Grass.

Often, even in well-formed rock-gardens, there are grass paths which are troublesome to keep and less good in their effect than those of stone. Also, in some of our best rock-gardens, there are often isolated rocks surrounded by grass, whereas they ought always to rise out of a bed of Thyme, creeping Speedwells, dwarf Heaths, Daphnes, or Milkworts. Some of the most charming scenes in those parts of the Alps richest in plants are

where single stones rise, perhaps, only a couple of feet out of ground which is densely covered with dwarf Daphne or Alpine Anemone. If fearful of trampling upon such plants (which we need not always be, seeing how the Thyme upon our heaths will bear trampling), the simplest way is to put a few old flagstones down as a path, placed not more than a foot apart; these permit of passage in all weathers without injuring the plants. Spaces wasted in many rock-gardens upon grass or gravel might, if well-carpeted, give good colour, and may at least be planted with Thyme, Stonecrop, Rockfoil, tiny Peppermint, and Sandworts. The objection to grass is that it is not nearly so good in effect as the rock-flowers, and it has constantly to be cut at the cost of needless labour.

Since writing the above a wall covered with *Erinus* has come into view, and not for the first time. Its modest colour is most effective when held together in this way, and there could hardly be a better example of the fine colour value that lies half hidden in these mountain flowers. As a dot this plant is without effect; on the wall it is beautiful hundreds of yards away, as well as in every nearer point of view.—W. R.

A GIANT THISTLE FOR THE WILD GARDEN.—We are indebted to Mr. Hiatte Baker of Oaklands, Almondsbury (Glos.), for a very interesting photo showing the fine effect of a giant Thistle (*Cnicus candelabrus*) in his garden. It is a biennial, a native of Greece and the Balkan peninsula, and in rich soil rises fully 10 feet when in flower, with handsome foliage and a graceful forward droop of its many flower heads. Its value when grouped for effect is well shown in the photograph, which we regret is not suitable for an engraving.

THE VIBURNUMS.

(Continued from page 188.)

THE GREAT GUELDER ROSE (*V. macrocephalum*).—A plant of great beauty when well flowered, but rarely seen in a fine state save upon sheltered walls, being of slow growth in the open and often cut back by late frosts. Its immense heads of bloom, measuring 7 or 8 inches across, resemble a great white Hydrangea, and being sterile the flowers remain long in beauty when safe from heavy rain. Large plants are rare, though here and there, as at Kew, Richmond, and other places in the south and west, it flowers finely as a wall shrub during early summer. In gardens of Japan and northern China it forms a spreading tree of 20 feet, of great beauty when carrying its cream-white clusters. Its bluntly ovate leaves are very flat, slightly toothed, about 3 inches long, and carried upon short stalks. The buds appear with the young leaves, in slightly pointed heads, the separate flowers more than an inch across. This kind is rather difficult of increase and (being a garden variety) is best grafted upon the wild form, known as *macrocephalum Keteleeri*—a plant hardier and more vigorous but of no great beauty, and commonly used by the Chinese as a stock for the finer form. Want of sun often causes a feeble show of bloom even under the best conditions, but where wall-space can be found in sheltered gardens, the beauty of the plant is so great as to make it worth a trial; light warm soil, with lime rubbish added if not present in the soil. In gardens of the south of Europe it is one of the finest plants for effect. Syn. *V. Fortunei*.

THE SOFT-LEAVED ARROW-WOOD (*V. molle*).—An American shrub of 6 to 12 feet, allied to the American Arrow-wood (*V. dentatum*) but more robust and finer in its larger dark green leaves covered beneath and upon the stems and flower-stalks with soft hairs. It flowers in July, several weeks later than *dentatum*, and its bluish berries are larger, more pointed, and full of oil. In gardens it is often confused with *V. pubescens*, a plant of the north-west, whereas this belongs to the Southern States.

THE LONG-STEMMED GUELDER ROSE (*V.*

nudum).—A hardy erect shrub of 8 or more feet, common in swamps from Canada to the Southern States, with oblong-oval leaves, scurfy while young but smooth when mature, and carried upon long downy stems. The whitish flowers appear in broad branching heads upon long bare stems, as against the nearly stemless clusters of many kinds; berries round, passing from green to white, rose-pink, and bluish-



WILD FORM OF THE GREAT GUELDER ROSE.

black, and sweet when ripe. In mild seasons the leaves are almost evergreen, but the plant is more sensitive to cold than most of the American kinds. A geographical form of this plant, known as *V. nitidum*, is found in Britain and may be known by its smaller, narrow leaves of shining green, firm in texture. A pretty shrub when loaded during July and August with its

bright berries, showing several colours upon the same branch.

THE GLOSSY GUELDER ROSE (*V. obovatum*).—A spreading bush found beside water in the Southern States of America, and usually a dense grower of about 4 feet, but sometimes twice as high. Its branches are smooth and angular, and its leaves small, from half-an-inch to 1½ inches long, narrow, and of a bright glossy green; their edges are smooth or slightly dented and their texture thick and rigid. The white flowers open from April to June in small stemless clusters, followed by oval black fruits. A very neat and distinct kind, evergreen in mild winters but somewhat sensitive to cold. Syn. *V. Lævigatum*.

THE FRAGRANT GUELDER ROSE (*V. odoratissimum*).—A fine evergreen of 8 to 10 feet, with stout erect branches, glossy foliage, and sweet flowers. From the south of China and Japan it is tender in the open garden, requiring a wall and protection except in warm districts. Around the temples of Japan this shrub forms dense masses of 20 or 30 feet, the air being charged with the scent of their myriad clusters in flower-time. Its firm glossy leaves recall those of the Laurel in size and in their deep shining green; the flowers open in broad pyramidal spikes of 4 inches during spring. The berries, of a rich coral red when young, ripen to glossy black. Towards autumn the leaves assume a rich bronze-purple, and in many gardens it is grown in pots for the beauty of its foliage; when charged with young fruit it is a pretty plant for the house, showing well in artificial light. Syn. *V. Awafuki*.

THE COMMON GUELDER ROSE (*V. Opulus*).—A large shrub with smooth, light grey branches and bright green leaves, common in Britain and widely spread in Europe, Asia, and North America; it thrives in woods and damp places and is beautiful for its handsome flowers, crimson leaves, and many clusters of bright red berries in autumn. Though less showy in flower than its garden form—the Snowball Tree—it may be finely used in the wild garden, massed beside water or in damp bottoms, and colouring richly when freely exposed, especially upon chalk or limestone soils. The rounded flower-heads appear in June and July, the inner flowers yellowish and small, surrounded by a ring of larger sterile blossoms of pure white; the berries begin to colour by the end of July and hang

for several months, being rarely touched by birds. Of its many garden forms the following are the most important:—

THE SNOWBALL TREE (*V. Opulus sterile*).—A well-known and beautiful form of the wild Guelder Rose, much grown for its showy white clusters, composed of crowded sterile flowers gathered into rounded heads and drooping gracefully from the end of every shoot. Large bushes hung with these clusters are of fine appearance when allowed to grow freely beside water, or massed in the shrubbery. In small gardens it is no less useful as it may be freely cut back after flowering, the flowers coming upon the season's growth. It is often forced for the conservatory in spring, but should be grown in pots for awhile previously and not started early or forced hard; in fact, it is not at home under glass, being very subject to green fly. Massed in moist ground, the Snowball Tree grows fast into one of the most beautiful ornaments of the hardy flower-garden. Minor varieties are *fructo-luteo*, in which the red fruits of the wild form become yellow; *nanum*, a miniature plant for the rock garden, often less than a foot high, with small leaves and rarely known to flower, but conspicuous for the bright red colour of its stems; and *variegatum*, the leaves of which are blotched with white and yellow. By some authorities the American form (*V. Americanum* or *edule*) is regarded as a distinct kind, under the name of the Cranberry Bush. Save in more vigorous growth it differs only in slight details from the European kind; its fruits are used by American housewives as a substitute for Cranberries.

THE CAUCASIAN GUELDER ROSE (*V. orientale*).—A shrub from western Asia reaching 10 feet, and allied to *V. acerifolium*. Its leaves are three-lobed, coarsely toothed, with a few simple hairs on the under surface; its flowers, coming in July, are followed by red berries. A hardy kind of little interest.

THE MOUNTAIN GUELDER ROSE (*V. pauciflorum*).—A straggling shrub of a few feet, confined to the far north of America or mountainous tracts and cold woods further south. It does not thrive under cultivation, nor, indeed, is it of much value. The sparse white clusters, opening in early summer, give place to sour scarlet berries, while its appearance suggests a poor form of the Guelder Rose.

THE PURPLE-STEMMED GUELDER ROSE (*V. phlebotrichum*).—An erect shrub of 5 or 6 feet, with smooth branches and ovate leaves bearing long hairs upon their veins beneath. The loose few-flowered clusters upon slender nodding stalks open during May and June; the flowers white with a deep purple-calyx and purplish stalks. A pretty and distinct kind, assuming a uniform dull yellow in the autumn; liable to injury in severe winters.

THE PLUM-LEAVED GUELDER ROSE (*V. prunifolium*).—A large shrub or small tree of spreading habit, reaching 20 or more feet, beautiful in flower and thriving in dry stony ground. Its leaves are bluntly oval, smooth and shining, with a saw-like edge, recalling those of the Plum or certain Pears. Its flowers are pure white, fragrant, and very numerous as heavy white clusters of graceful effect, the long stamens tipped with yellow conferring an added charm. The fruits are rather large, bluish-black, and covered with greyish bloom. It is nearly allied to *V. Lentago*, with similarly fine foliage, and not nearly so well known as it deserves. Easily raised from seed and quite hardy. Syn. *V. pyriformis*.

THE DOWNY GUELDER ROSE (*V. pubescens*).—A compact bush of a few feet, with slender erect branches covered (particularly when young) with soft down. Found in Canada and the Northern States in dry rocky places, and a good shrub for similar spots in gardens. The small dense clusters of white flowers develop into dark purple fruits. An uncommon plant of good habit, the long protruding stamens giving the flowers a distinct appearance.

THE LARGED-LEAVED GUELDER ROSE (*V. rhytidophyllum*).—One of Veitch's new Chinese kinds, described as a handsome shrub of about 10 feet, and unlike any other of the group. Its leaves are very large, upwards of 8 inches long

by 2 or more wide, broadly lanceolate, with a wrinkled upper surface lined with prominent veins and a coating of dense wool beneath. At the ends of the shoots showy heads of crowded yellowish-white flowers appear, 7 to 8 inches across.

THE RUST-CLOTHED GUELDER ROSE (*V. rufidulum*).—A robust shrub or low tree from the Southern States, and formerly classed as a form of the Plum-leaved Viburnum, differing in leaf and flowering a little later; it is now held to be distinct. It is a low tree of 25 feet when full grown, its glossy leaves covered beneath with rust-coloured down. Its flowers are showy, pure white, in broad heads of 4 or 5 inches, and suc-



THE DOWNY GUELDER ROSE (*V. PUBESCENS*).

ceeded by large dark blue berries, half-an-inch long, and very handsome. A kind worthy of wider use for its beauty of leaf, flower, and fruit.

CANARY ISLAND'S LAURUSTINUS (*V. rigidum*).—A dense evergreen of 6 feet, with stout hairy branches, tender in the open but succeeding against walls in the warmer parts of Britain. The leaves are broadly ovate, wrinkled and hairy, with white flowers as large open clusters in early spring; the oval berries are purple when ripe. Brought from the Canaries in 1795. Differs from the Common Laurustinus in its larger and more hairy leaves and flower heads, but being tender and less free is of no great value. Syn. *V. rugosum*.

EVERGREEN JAPANESE GUELDER ROSE (*V. Sandankwa*).—A tender Japanese shrub thriving only under glass in this country, and though evergreen, of minor interest for the greenhouse. Its slender leafy branches attain some 5 or 6 feet, with shining dark green leaves and creamy-white flowers tinged with pink, drooping in close conical clusters of about 1½ inches. The fruits are red, but do not set freely under glass, nor even in the south of Europe—where it is planted in shrubberies and more often seen than in this country. Syn. *V. suspensum*.

SARGENT'S GUELDER ROSE (*V. Sargentii*).—A Chinese kind of recent introduction and very near the Common Guelder Rose but of denser, more upright habit, darker stems with thick spongy bark, and leaves thicker and distinct in shape. The outer sterile flowers also are larger—measuring more than an inch across—with dark purplish anthers, but in fruiting it is less free.

SIEBOLD'S GUELDER ROSE (*V. Sieboldi*).—A deciduous hardy shrub of free growth, with stout branches reaching 10 feet, and dark green leaves, flat, thick, and leathery, shining above and hairy beneath, with an unpleasant smell when bruised. White flowers in broad clusters during early spring, and rosy fruits ripening to bluish-black. Japan. Syn. *V. reticulatum*. A plant with handsome, glossy foliage and beautiful in flower; its fruits drop as soon as ripe. Though sometimes supposed tender, Messrs. Gauntlett (to whom we are indebted for some fine heads of flower) assure us of its hardiness in the south-west, where it is quite uninjured by 16 degrees of frost. It resembles *V. plicatum* in aspect and habit, but is rather more free in growth and less rigid in outline. Grown also in two or three garden forms, including *reticulatum*, which is smaller in all its parts, less hairy, of paler green, and neither so vigorous or hardy as the parent; a second variety bears variegated leaves.

THE LAURUSTINUS (*V. Tinus*).—One of the best of hardy evergreens, flowering freely throughout the winter in mild seasons and beautiful when laden with its many clusters of flowers, rose-pink in the bud and upon expansion, but pure white when fully open. Handsome at all seasons for its leaves of deep shining green, slightly hairy upon the veins and stalks, and in mild seasons for its dark blue berries. It

is a common shrub in woods and moist places of the south of Europe, with a fondness for old walls and ruins. In the dry seasons of the Mediterranean coast it is very subject to thrip, and plants many feet in height, both wild and in gardens, are often utterly spoiled by this pest in a short time. As a shrub of neat habit it is much grown in pots and gently forced for the greenhouse or rooms in early spring. Quite a number of garden forms are grown of which the best are:—

FROEBEL'S LAURUSTINUS (*V. T. Froebeli*).—A very neat compact form, with leaves of lighter green and flowers of purer white.

THE HAIRY LAURUSTINUS (*V. T. hirtum*). A variety from Spain and Portugal, hardier than the common form, with rounder leaves, hairy beneath and upon the edges, and a long season of bloom from autumn throughout the winter. A good kind for exposed places.

THE AFRICAN LAURUSTINUS (*V. T. lucidum*).—A very distinct form from the mountains of North Africa, less branched and widely spreading in habit, old plants covering much ground though keeping low. Its leaves are brightly glossy and shining, particularly when young; the leaves, flowers, and flower-clusters also are larger than in the European kind. It is, however, rather difficult of increase and tender (except upon walls) in many gardens, its leaves and buds being killed in severe seasons. Even when not destroyed the buds often fail to open well and never until spring is far advanced; it is, therefore, not worth planting in many places. Grown as a pot-plant under glass it lasts long in beauty, but will not stand forcing. A variegated form is also in cultivation.

THE PURPLE LAURUSTINUS (*V. T. purpureum*).—A compact form of free growth, in which the leaves are suffused with dull purple against which the pale flowers show in sharp contrast. Neat and constant. Among minor forms are *pyramiale* (or *strictum*) of erect tapering habit and dense growth, with large leaves and flowers, but blooming later and not so free, while the rigid stems are wanting in grace. *Virgatum* is a much-branched Italian form of erect tapering habit, and narrow, hairy leaves; while *rotundifolium* is yet another leaf variation. Finely variegated forms of all these kinds are to be had, but being tender their garden value is small.

THE JAPANESE GUELDER ROSE (*V. tomentosum*).—A beautiful hardy shrub from the far East, of spreading habit and branches of 8 or more feet, hairy while young. It is handsome at all seasons, distinct and beautiful in leaf, showy in its clusters composed in part of large sterile blossoms, and in its bright scarlet fruits ripening to bluish-black. Though in itself worth a place in any garden, this species is most familiar in its improved form known as *V. plicatum*, or the Japanese Snowball Tree, one of the commonest and best-loved plants in Japan. In this kind all the flowers composing the cluster are enlarged and sterile, appearing as white rounded masses borne with great freedom. It forms a flat spreading head, 6 or 8 feet high when fully grown, with reddish-brown shoots, distinct in foliage, and flowering when quite small. Its neat habit is adapted to small gardens, needing no restraint—in fact, it is averse to cutting. It is stiffer and less graceful than the common Snowball Tree, also less hardy and not so easily transplanted, but its showy flowers are a purer white, clustered thickly in pairs upon the shoots during May and June and lasting long in beauty. Isolated or grouped its effect is good, and it is one of the few shrubs that do well upon a north wall seldom reached by the sun. For forcing it is the best of all, small plants potted in autumn flowering early and lasting well in the greenhouse, where they are less subject to aphids than *Opulus*. Easily increased from cuttings of half-ripened wood in close frames, or by layers of the side-shoots. There are several varieties with distinctive names, including *grandiflorum*, with very large clusters; *rotundifolium*, with broader leaves and somewhat earlier in bloom; *cuspidatum*, distinct in leaf but of slow growth and shy in flower; and a variegated form.

VETTER'S VIBURNUM (*V. Vetteri*).—A garden cross raised in Germany between *Lentago* and *nudum*, and only differing from the first named in small details.

VEITCH'S VIBURNUM (*V. Veitchi*).—Another of Veitch's introductions from China, closely allied to and nearly resembling their other new kinds, already described.

WRIGHT'S VIBURNUM (*V. Wrightii*).—An erect shrub of free growth from the mountains of North Japan, and quite hardy in Britain though as yet hardly known. It is of spreading

habit and nearly allied to *V. dilatatum*, but yet finer in fruit. The leaves are large, thick, and rounded, coarsely dented, and brilliantly tinted with scarlet and ruddy purple on fading. Its large fruits are very handsome in their early stages, making this new kind one of the finest for autumn beauty. B.

THE LILY-PINK (*Aphyllanthes monspeliensis*).

THE month of May is everywhere beautiful and nowhere more so than in the south of Europe, where the floral wealth of an entire summer is crowded into those few weeks of early heat, before the fierce sun succeeds in banishing the last freshness of spring. Then is the time for the lover of scarce plants to forsake the beaten tracks and scour the shady woods, following the mountain streams—impassable in winter and already shrinking day by day to a waste of stones—and searching the sunny hillsides for the hidden treasures among their myriad flowers, over which the air hangs heavy with mingled perfume. It was upon some such pathless ramble that I first saw the Lily-Pink or "Flowering Rush of Montpellier" in its beauty, and, never having seen the little gem in the gardens of the homeland, I stood transfixed. A little dell, still freshened by the dews and never wholly parched even in August, with a kindly screen of Spanish Broom (*Spartium*), of Myrtle, and Lentiscus, cutting off the chilly down-draught so treacherous after nightfall, and just sheltered from the fiercest of the glare by scanty Pine boughs. Within that narrow space the plants were massed in scores and hundreds, though outside that little colony it disappeared completely and only once again did I light upon it in my

rambles. Plants of all sizes, from tiny roots just starting on their own, to patriarchal tufts 2 feet across, that must (so slowly does it spread) have seen the sun in the days when the great Napoleon called away the peasant from the brush-grown terraces below to die on the plains of Italy, and Massena drilled his men in the fortress-crowned rock across the valley. Thousands of starry blue flowers, nearly an inch across and not unlike the Spring Star Flower, but balanced quivering upon slender rush-like stems of dull dark green, and freely intermingled—by chance, or that inscrutable *design* which never errs—with such a sprinkling of the pretty little Onion Asphodel (*Asphodelus fistulosus*) with its branching spikelets, as to form a perfect miniature in Nature's picture-gallery. I left them as I found them, save for a gathered flower or two, and a tiny root which might remind me in days to come of its home amid the sunny hills of Provence, and there, I doubt not, they await some other wanderer to whom I willingly bequeath his meed of joy.

Though perfectly hardy, beautiful, and curious in its structure, the Aphyllanthus is a scarce plant in Britain, hardly seen outside botanical gardens and rarely offered by the trade. Even in Europe it is little known, being confined to the sunny hillsides of southern France—a region rich in floral treasures. As a neat perennial, thriving for years without attention in sunny corners of the rock-garden, its charming flowers might enrich many a choice collection of hardy plants. There are no true leaves, only a dense tuft of upright rush-like stems of

8 to 12 inches, at the very tip of which the flowers burst forth, of a rich gentian blue and borne in succession from May till late in summer. At all times of slow growth and with little root, old tufts need dividing with care; it may also be raised in a cool house, from seeds sown in pots as soon as ripe. To do well in our climate it should be planted in light soil such as sandy peat or almost pure sand, with as sunny a spot as can be found; grown in this way it has proved hardy without protection, and flowered freely as far north as Yorkshire and the north of Ireland, so that there are many gardens where this dainty and interesting little stranger might fittingly find a home.—B.

COLLECTIONS OF OUR DAY: CASTLEWELLAN.

IRELAND is a land of castles, or country houses so called, but there is only one Castlewella, and its garden vegetation so far as trees and shrubs are concerned is certainly unique in its variety and importance. The residence and home grounds lie in a picturesque and undulating valley, the soil being a rich and fertile loam on the granite formation. Around on nearly all sides rise the bold and rocky declivities of the Mourne Mountains, and the Slieve Donard is seen towering skywards to a height of nearly 3,000 feet. The valley of Castlewella lies open towards the sea, which is only three miles away, and, no doubt, exercises a softening influence on the climatic conditions of the locality. The mountain and coast line scenery of the whole district is remarkably bold and



CASTLEWELLAN. (Engraved for "Flora.")

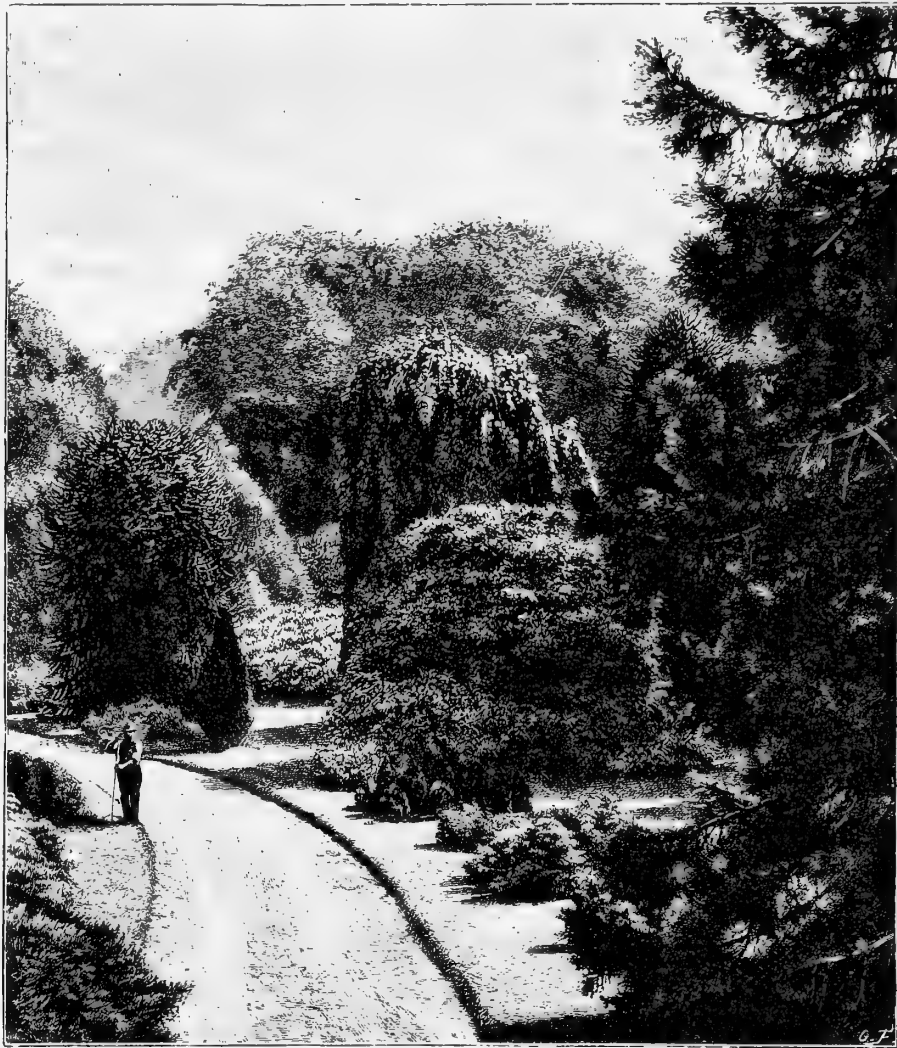
fine, and the glorious prospect of the Mourne Mountains as seen from Strangford Lough was especially admired by H.M. King Edward VII. during his visit to Ireland in 1903. The residence stands on the mountain side overlooking a lake a mile or so in length, and commands extensive and exquisite views of the surrounding scenery. The gardens and grounds are very extensive, and contain one of the most wonderful collections of native and exotic trees and shrubs in the kingdom. The making and planting of the beautiful grounds by the Earl of Annesley at Castlewella has been a labour of love to their owner for many years, and he has been ably assisted by Mr. Thomas Ryan, his lordship's head gardener, who is a past master in the propagation and cultivation of choice shrubs and trees. Turn where one may at Castlewella the scenery and vegetation are alike of the most attractive character. Apart from the broad effects of mountain-side, wood, and water, there are incidental charms all over the place—a golden or Lady Amherst pheasant crosses your path in the woodland walks, Japanese deer browse on the hill-side slopes along with red and fallow deer, and there are wild fowl of many kinds on the large lake, to which the great grey herons come afishing morning and evening from their nesting places in the surrounding woods and trees. The beautiful cut-leaved and dwarf-growing Maples of Japan thrive very luxuriantly at Castlewella on the lawn and elsewhere, and the pretty little deer of Japan (*Cervus sika*) thrives well in the park, where there are also hybrid offspring between the Japanese and the

red deer (see *Field*, October 31, 1903, p. 763).

The garden and grounds at Castlewella apart from their natural beauty show conclusively that their owner is a pioneer in the collection and cultivation of all choice hardy or half-hardy trees and shrubs from the temperate climates of the world. It is indeed not too much to say that Lord Annesley's exertions in this direction may be mentioned in the same breath with those of the Earls of Mount-Edgcumbe, the Foxes of Penjerrick, Mr. Dorrien-Smith of Tresco, Lord Barrymore of Fota, Lord Powerscourt, and Mr. Thomas Acton in the Co. Wicklow, and others who have done so much to enrich the tree and shrub Flora of British and Irish gardens; Lord Annesley has taken a practical interest in his garden and home grounds for many years, in fact we believe since his return from the Crimea after the Russian War. One of his latest contributions to literature has been recently published by George Newnes & Co., Ltd., under the title of "Beautiful and Rare Trees and Plants," with seventy or more beautiful photographs of some of the most noteworthy exotic trees and shrubs now growing at Castlewella. Not only are many of the exotics growing at Castlewella rare in our British gardens, and in some instances of large size, but their health and vigour are equally remarkable, and one may see and admire things which grow happily here in Northern Ireland in the open air that are rarely seen elsewhere in Britain except much further south and west or as grown in the great Temperate House at Kew or in winter-gardens elsewhere.

Castlewellan is the home of a distinct and beautiful Daffodil which was found naturalised and growing abundantly there some years ago, and whence it has been distributed under the name of *Countess of Annesley*. Apart from hardy or out-door trees and plants, however, the extensive ranges of plant and fruit

from the same source. Adjoining the mansion at Castlewellan is a well-furnished and artistically arranged winter-garden. Here we especially noticed healthy masses of the rare *Arundinaria aristata*, a species introduced by Lord Annesley from Northern India (see "Bamboo Garden," pp. 176-177). It



EVERGREEN TREES AT CASTLEWELLAN.

houses are well worthy of attention—ferns, palms, rare aquatics, orchids, and plants with ornamental foliage are all well grown. In the aquatic-house the very handsome *Nymphaea gigantea* of Queensland has flowered well for several years (see FLORA AND SYLVA, Vol. I., p. 303), and we have also seen it very beautiful in the Belfast Botanical Gardens

grows naturally at about 11,000 feet elevation on the North-Eastern Himalayas, and has proved a very hardy and ornamental garden plant. Cleanliness of growth and beauty or freshness of foliage are due no doubt to a rich and fertile soil, to good cultivation, and to the all-important matters of plant food and feeding, and lastly, but certainly not

least, to constant attention and more or less perfect natural shelter in proximity to the sea. Other very important factors are "The Master's Eye," as George Herbert has it, and the forethought and attention of a thoroughly able and practical gardener who has lived half a lifetime or more on the place, and, moreover, possesses an accurate knowledge of its peculiar cultural possibilities.

F. W. BURBIDGE.

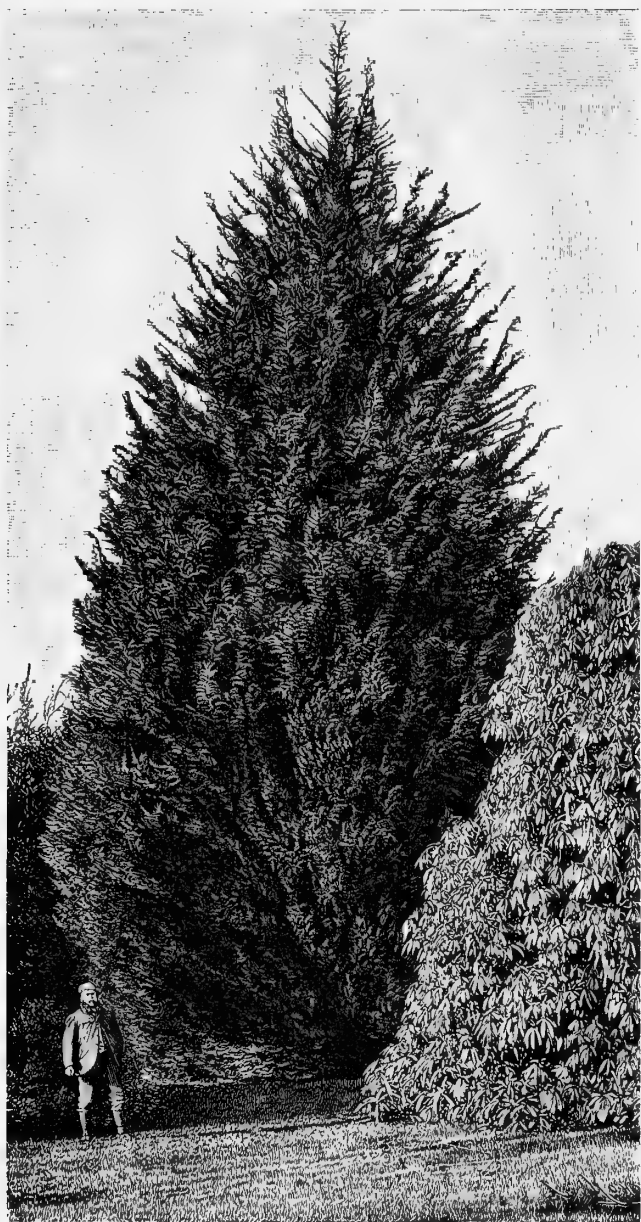
A LIST of some rare or tender plants grown in the open air at Castlewellan:—

Abelia floribunda.
Acmena ovata.
Berberidopsis corallina.
Bænninghausenia albiflora.
Brachychiton populneum.
Brachyglottis repanda.
Callitris cupressoides.
Callistemon coccineus.
Carmichaelia australis.
Cassuarina torulosa.
Cordyline indivisa vera.
Cyrilla racemiflora.
Dacrydium Franklinii.
Davidia involucrata.
Disanthus cercidifolia.
Dodonea viscosa.
Drimys aromatica.
Entelea palmata.
Eugenia ugni.
Fagus Cliffortioides.
Fremontia californica.
Glyptostrobus heterophyllus.
Gordonia Lasianthus.
Hakea crassifolia.
Illicium religiosum.
Jambosa australis.
Lapageria alba and rosea.
Laurelia aromatica.
Leucapogon Richei.
Lomatia pinnatifolia.
Mallotus japonica.
Musa basjoo.
Mutisia clematis.
Myrsine ilicifolia.
Nandina domestica.
Osteomeles anthylidifolia.
Puya chilensis.
Pomaderris argentea.
Polygala Dalmaisiana.
Quercus bambusæfolia.
 „ *incana.*
Quillaja saponaria.
Raphiolepis indica.
Restio subverticillatus.
Sarcococca Hookeriana.



PICEA CONCOLOR VIOLACEA AT CASTLEWELLAN.

Simmondsia californica.
Stauntonia hexaphylla.
Stranvæsia glaucescens.
Tricuspidaria hexapetala.
Umbellularia californica.
Ungnadia speciosa.
Visnea mocanera.
Westringia rosmariniformis.



THE MONTEREY CYPRESS AT CASTLEWELLAN

RHODODENDRON GAUNTLETTI.—We have received from Messrs. Gauntlett of Redruth a large and handsome, delicately coloured Rhododendron, a hybrid between *Rs. Aucklandi* and *ponticum*, with much of the colour and size of truss found in *Aucklandi*.

WHEN "THE FLOWERS APPEAR ON THE EARTH."—Those who would learn by Nature's handiwork are soon struck by the fact that many of her most beautiful object-lessons are due to the lavish use of simple means. What is more entrancing in spring time than to wander through a wood set with millions of Blue-bells, so crowded that a score of flower stems lie crushed at every step, and yet are not missed amid that vast profusion? There is just enough of variety to please; a scattering of rosy *Lychnis*, a colony of snowy *Wood Anemone*, a trailing mass of *White Starwort* clinging to the undergrowth as though in terror of those waves of blue, and a tuft or two of yellow *Dead Nettle* that will not be displaced; these, and the sprouting *Fern-fronds*, break that sun-flecked sheet of azure which stretches into distance in light or darker ripples, with every flicker of the sunbeams, dartingly evasive of the clustered branches that would impede their passage to dance among the flowers. Such a sight goes home to that inner chamber of one's nature where slumber memories half-forgotten of many another thrill struck upon chords responsive to this mystic spell of Mother Earth. Sometimes it is a blend of many harmonising hues, but oftener some lavish spread of but a few. *Blue Hepaticas* and *Scillas* of every shade thrown down upon a carpet of *Primroses* and wild *Orchis* upon the southern Alps; or, in the higher fastnesses, some widespread tracery of blue *Forget-me-nots*, of mountain *Cornflower*, of *Gentian* or *Narcissus*, or purple *Cyclamen*; a memory of hillsides clad in white, and

gold or purple; of woodlands, modest but chastely beautiful in garb of Snowdrops, of Wood Anemones, and Lily of the Valley, with secret nooks in which the Royal Fern stands shoulder high; of spangled plains with hosts of Star Anemone, or dazzling ranks of scarlet Poppy, or pale with Cowslips or Meadow Saffron; even that lavishness of Buttercups and Daisies, Ox-eyes and Quaking Grasses, with yellow Marigolds and Ragged Robins along the waterside, which roused our earliest enthusiasms, these all come back to us in such a moment, and with moments such as these life's treasure-house is garnished. How rare it is to find such chords awakened by human handiwork, however skilful.

B.

NICOTIANA SANDERÆ.*

ONE of the most useful of summer-flowering annuals is *Nicotiana alata*, better known as *N. affinis*. It was introduced into English gardens twenty-three years ago by Mr. Cullingford of Kensington, who obtained it from Hyères (Alpes Maritimes), but it is a native of South Brazil. It is of the easiest culture, and all through the summer its long-tubed white flowers, borne freely upon wand-like stems, emit towards evening a powerful and agreeable fragrance.

Four years ago Messrs. Sander and Sons of St. Albans obtained from Brazil, through their collector Forget, a *Nicotiana* with bright rose-red flowers, which they named *N. Forgetiana*. In its free-growing habit and numerous branches with many flowers, it bears some resem-

blance to *N. alata*, but the flowers are smaller, the tube being an inch long, the segments an inch across, with an Auricula-like eye. I can learn nothing of this plant beyond what Messrs. Sander have told me, but I shall not be surprised if it proves to be *N. flexuosa*, a native of Monte Video, where Tweedie found it while collecting for Kew about seventy years ago. It is a pleasing plant in every respect, and if it had been distributed as "a new and beautiful hardy annual" it would have found general favour. But Messrs. Sander decided to keep it as a breeder, and they married it to *N. alata* with most gratifying results, the product being the hybrid here figured. This plant has all the good qualities of *N. alata*, plus the colour and flat, open-faced flowers of *N. Forgetiana*. A large houseful of it in flower at St. Albans a few weeks ago was a most pleasing picture, each plant being about a yard high, leafy to the base, with from six to nine branches, divided again into at least half-a-dozen branchlets, each bearing from six to ten open flowers, with many buds to follow. Every plant was an elegant arrangement of rich green foliage and clusters of large rose-red flowers. The largest flowers I measured were $2\frac{1}{2}$ inches across. Of course these plants were growing in pots, but I am assured by Mr. Sander that equally good results may be obtained from plants grown in the open border, the plants I saw being partly for exhibition and partly for the production of seed. No doubt *N. Sanderæ* will be more generally valued as a plant for the open-air flower-bed, but it will also be of considerable

* With coloured plate from a drawing by H. G. Moon at St. Albans.



NICOTIANA SANDERÆ.

decorative value as a pot-plant for the conservatory. I learn that it produces seeds freely and that it comes true from seed.

It may be worth while to give particulars of the treatment which produced the plants just described. The seeds were sown in heat and the seedlings treated like young Begonias for a few weeks until they were strong enough to be potted into three-inch pots, when they were removed into a sunny greenhouse, where they remained all winter. They were repotted, the final shift being into nine-inch pots. The soil used was the ordinary mixture of loam, leaf-mould, and sand. In March they commenced to flower, and in June were still flowering freely. For cultivation in the open air the seeds should be sown in a little warmth in February and the seedlings afterwards treated as for Stocks, Asters, &c. But anyone who can grow the popular white-flowered *N. alata* (*affinis*) will have no difficulty in growing its red-flowered offspring, *N. Sanderæ*.

Royal Gardens, Kew.

W. WATSON.

THE TOBACCOS (*Nicotiana*).—Whatever be one's estimate of the industrial value of the Tobacco family, there can be only one opinion as to its beauty in the garden and the conservatory, where the graceful habit and rich fragrance of many kinds have made them welcome. For beauty under glass in the winter and in the open garden during summer few plants are more reliable than the free-flowered border kinds; the value of those grown for their fine foliage depends upon place and season, a warm soil and fine weather

alone insuring a good result. All the kinds are of the simplest culture in rich soil, being easily raised from seed, and many from cuttings of the root or side-shoots; being very small, seedlings require care in their early stages. Tobaccos should not be planted near crops grown as food, the greatest risk in this respect being with the Common Tobacco; in the south of Europe land which has been devoted to its culture is rendered unfit for other crops, beans, tomatoes, and other vegetables grown in the same soil being so tainted as to violently disagree with the consumer. The Nicotianas—named after Jean Nicot, who brought the Tobacco to France—form a large group of fifty or more species of wide distribution; those best known are as follows:—

PETUNIA-FLOWERED TOBACCO (*N. acuminata*).—A slender perennial herb of about 3 feet, bearing during summer few-flowered clusters of tubular white flowers, threaded with green veins. Rare in gardens. Argentine. Syn. *Petunia acuminata*.

STARRY WHITE TOBACCO (*N. acutiflora*).—A handsome Brazilian herb of 2 to 3 feet, bearing white flowers 4 inches long in the tube, spreading into five equal lobes set star-wise, and about 1½ inches across. Arranged in sparse heads of fifteen or twenty, the flowers are borne for a long time, and are held more erect than in most kinds, opening towards evening and fading before noon next day. Though somewhat rough in leaf, it is a pretty plant, and its scentless flowers are sometimes preferred to the strongly-scented blossoms of other kinds. Syn. *N. acutifolia*.

WHITE TOBACCO (*N. alata*).—The best known of the group, very fragrant, with a long season of bloom, and nearly hardy in places with a mild winter. In any case, if the fleshy roots be lifted with soil and stored dry through the winter, they will give root-cuttings yielding plants that are dwarfer and of finer habit than seedlings. Planted in rich soil it grows

6 to 8 feet in the season, bearing many white flowers, which open in the evening, filling the air with fragrance, though for the greater part of each day they remain closed, limp, and scentless. This is against their wide use in gardens, save as groups in quiet spots near woodland walks, where the starry flowers are seen in the gloaming, and, sheltered from the early sun, remain open till late next morning, while their fragrance may be enjoyed on warm evenings, though by daylight they are again scentless. They should be planted in bold masses towards the end of May, old plants coming earlier into beauty but not lasting quite so long in flower as seedlings. Given shelter, rich soil, and moisture, their culture is of the simplest, but if too exposed their appearance is soon spoiled by bad weather. From the dwarfier plants raised from cuttings the flowers may be cut and will remain open in water for several days, but when from more vigorous plants they fade too soon to be of much use. The plant is easily raised from seeds, which often spring up in the border around the parent; root-cuttings, or the offsets which are often thrown up by them, are also easy ways of increase. But if strong clumps are planted in a sheltered spot they will often last for years, dying away completely in winter, but growing again from the old roots, and covered with bloom during summer. As a pot-plant it is useful for its winter flowers, which remain open at that season, though coming without scent; by cutting back old plants and raising seedlings in succession, it is possible to have plants in beauty the year through. In certain cases of delicate skin the rough leaves of this plant cause a stinging irritation, lasting sometimes for days; when used cut, also, the stems give off a sticky juice, which is unpleasant and with difficulty removed from clothing. Though prolific in seedlings they differ little in character, the only varieties being *decurrens*, a dwarf free-flowered form branched almost from the base; a second kind with flowers faintly flushed; and a worthless variegated form. Crossed with *N. Forgetiana*—a rare Brazilian species—this kind has given us the beautiful hybrid *N. Sanderæ*, already described. Syn. *N. affinis*.

CALIFORNIAN TOBACCO (*N. Bigelovii*).—A handsome night-flowering kind from the Pa-

cific coast, with white flowers, shorter in the tube than most kinds and little more than an inch across; an annual of dwarf, erect growth.

FRAGRANT TOBACCO (*N. fragrans*).—An old garden plant discovered some fifty years ago growing upon the shores of the Isle of Pines in the New Caledonian group. Its flowers of greenish-white hang in large drooping heads upon stems of 3 or 4 feet, and are very long in the tube, with broad-spreading lobes of almost fleshy texture, and strongly fragrant. Its stemless leaves are thick and fleshy, and the entire plant clothed with soft hairs; in rich soil its growth is ungainly, but its many flowers are effective in the border and useful under glass during autumn and winter.

YELLOW TREE TOBACCO (*N. glauca*).—A vigorous shrub in America and southern Europe, growing many feet in one summer, with rounded fleshy leaves of a bluish-grey colour and pendant clusters of tubular yellow flowers, small at the mouth and covered with soft down. In young plants the foliage is of fine effect, but the branches being very brittle, old plants are often spoiled by wind. In sheltered places it sometimes becomes a tree of 25 feet, flowering and seeding so freely that the young plants take root everywhere, in walls, pavements, or even roofs, showing great vitality. In northern countries it is not much seen in the greenhouse, though seedlings soon reach flowering size. One of its commonest uses under glass is as a stock for young shoots of *Petunias*, which may be inserted with quaint effect upon the stout, woody stem; but, save as a curiosity, such specimens are of no value. Argentine.

LANGSDORFF'S TOBACCO (*N. Langsdorffii*).—A Brazilian herb of 4 or 5 feet, with wide-mouthed trumpet-shaped flowers of yellowish-green, very slightly divided into lobes, and appearing as nodding clusters upon long branching stems; leaves stemless and covered with clammy hairs. August.

CHILIAN TOBACCO (*N. longiflora*).—A little-known plant, bearing upon long slender stems of 2 to 3 feet, salver-shaped flowers, white inside, with a long green or purple tube. Sometimes grown in place of *N. alata*, but less good in colour.

NIGHT-FLOWERING TOBACCO (*N. noctiflora*).—Akin to the last, and perhaps only a form of it, with hairy, sticky stems and long spikes

of funnel-shaped flowers, white within and purple upon the outside. The flowers open at night, towards the end of summer. Argentine. A white-flowered variety of this kind introduced by Messrs. Dammann of Naples as *N. noctiflora albiflora* is a better plant, with smooth grey-green foliage and much-branched stems of 3 feet or more. The flowers, coming in clusters of twenty to thirty, are small, pretty, and fragrant, opening towards evening and remaining open till the morning. In mild years and warm districts the roots pass the winter in the ground, forming beautiful tufts in their second season.

CLUSTERED TOBACCO (*N. paniculata*).—A kind coming very near to *N. Langsdorffi*, but smaller, and with stalked instead of stemless leaves. S. America.

PERSIAN TOBACCO (*N. persica*).—A species unknown in gardens but largely cultivated in the east, where it yields the famous Shiraz tobacco; flowers white within, greenish without and in the tube.

SYRIAN TOBACCO (*N. rustica*).—A low, homely plant of uncertain origin, believed to have come from the Old World (Syria) though now common as a wild plant in Mexico and North America. It is a hairy and sticky annual herb, with funnel-shaped flowers of green or dull yellow, opening in the daytime, but of little beauty.

SWEET AUSTRALIAN TOBACCO (*N. suaveolens*).—A variable herb of graceful habit, with fragrant white flowers in loose clusters during summer, and pretty for cutting. Its low growth and unbranched stems make it useful where more vigorous kinds would be out of place, while it will flower well in half-shade. The salver-shaped flowers of about an inch wide are very pure though sometimes tinged with green on the outside, while the broad lobes of the corolla so overlap at the edges as to form a neatly rounded flower. Australia and New Holland. Syn. *N. undulata*.

MOUNTAIN TOBACCO (*N. sylvestris*).—A fine plant of good habit and foliage, being better in this way than many of the group. Discovered in the mountains of Argentina at a height of 5,000 feet, it has proved one of the best new border plants of recent years, growing with great vigour to a height of 5 or 6 feet, its stems branched almost from the ground and bearing

a profusion of pure white blossoms from July into late autumn. The flowers resemble those of *N. alata* but are narrower and longer in the tube (which is also rather inflated in the centre) and are carried loosely in long spikes of 12 or 15 inches, covering the plant, and keeping open all day in cloudy weather. Though the flowers hang, the leaves stand nearly erect, with an appearance unlike any other kind. Though mostly grown as an annual the fleshy roots are perennial, and young plants may be raised from root-cuttings in early spring. Plants wintered under glass make fine masses when planted out in their second season, and are of better habit than young seedlings; in warm gardens of the south, protected plants would perhaps survive a mild winter in the open.

COMMON TOBACCO (*N. Tabacum*).—Though cultivated on a vast scale to supply the growing demand for tobacco, this plant is rarely seen in gardens, owing in part to the restrictions placed upon its use—even for ornament—in many countries. But this is no great loss, for its intensely poisonous root and smell are not without danger in a garden, and though of imposing growth the plants are very liable to be damaged in bad weather. A few distinct varieties are grown for their massive foliage, of which the best known are *fruticosum*, of dwarf habit with stout woody base and narrower leaves, which are less exposed to injury in storms; *macrophylla*, a plant reaching 8 feet and bearing very large leaves of 18 inches long, prettily waved and of good colour, and large flowers in several shades from carmine to rosy-purple; *grandiflorum* and *purpureum* are other large-flowered varieties in various shades, but in this species the flowers often appear so late in the autumn that whatever beauty they have is soon lost. For this reason they are sometimes grown in pots and flowered under glass.

GIANT TOBACCO (*N. tomentosa*).—A stately plant first introduced to gardens through stray seeds sent to France from Brazil with a consignment of orchids. When well grown its tall stem of 8 or more feet stands stoutly erect, bearing immense leaves of dark olive green, the conspicuous rosy-brown colour of the veins, and their tougher texture, marking it out from other kinds. Given ample space and rich soil, a group of these plants forms a striking object upon the lawn or at the end of a vista, and spite

of its great leaf-surface its good habit enables it to stand more wind than other kinds. Though often raised from seed and grown as an annual for summer effect, the plant is perennial under glass and may be grown from cuttings of the roots, or side-shoots taken in August, and this is the best way where few plants are needed. To gain the finest effect the side-shoots are suppressed during active growth. The short, tubular flowers of greenish-yellow, flushed inside with rose, are of little beauty and seldom seen in the open. A handsome variegated variety is sometimes grown and may be used finely for summer gardening, the bold blotches of creamy-white gaining beauty by full exposure without being garish. It is, however, of difficult increase, seedlings invariably damping when they come true and cuttings turning out almost as badly. A method stated to give good results consists in placing the base of the newly-trimmed cutting within a notch cut in a small potato; though no union results (the potato often disappearing) the nourishment so drawn by the cutting tides it over the critical stage and enables it to root in safety. Syn. *N. colossea*.

LARGE-LEAVED TOBACCO (*N. wigandoides*). — A stately shrub-like plant from Columbia, growing 6 or 7 feet, with very large hairy leaves like those of the *Wigandia* in size and shape, and short flowers of yellowish-white in drooping clusters. A greenhouse plant, sometimes used with fine effect in the summer garden.

HYBRIDS. — Numerous hybrid Tobaccos have been raised, but the plant raised by Messrs. Sander is the first conspicuous gain. Other crosses have been made between the Common Tobacco and several other species, including *Ns. alata* and *sylvestris*, but the influence of *N. Tabacum* proves overwhelming. In America a race of hybrids between *tomentosa* and *wigandoides* is said to excel both parents in beauty and vigour, but remaining sterile, these plants have probably never reached this country. A cross between *N. wigandoides* and the *Petunia* of gardens, produced a strange race of annuals (called *Nicotunias*) with long trailing stems covered with short woolly hairs and many flowers, handsome and of varied colour. Though easily grown from cuttings they proved perfectly sterile and so defective at the root that spite of their beauty they soon sank out of cultivation. B.

THE CHILIAN BELL-FLOWER (*Lapageria*).

THERE was a time when these lovely greenhouse climbers were scarce and considered delicate, but finely-flowered plants are common now that their needs are understood. In one respect the *Lapageria* has been fortunate, having kept unchanged its first name, given in honour of the first wife of the great Napoleon — Josephine de *Lapageria*. Discovered early in the last century by travellers in Chili, it was first sent to Kew in 1847 and to Messrs. Veitch in the following year, flowering in 1850. From that time it has been a favourite plant for glasshouses, though we think that in parts of Britain a finer use might be made of it in the open air.

At Home. As with many plants of the Chilian Andes success lies in reproducing as far as may be the peculiar climatic conditions of its native home. A moist atmosphere, even temperature, half-shade in exposed places, and abundance of water during its time of growth, are the essentials of its culture. In many parts of Chili it is one of the commonest of plants, threading its way through bushes and the moist undergrowth of shady places, generally near the coast but often at a considerable elevation, and hanging forth its richly decked garlands of bell-shaped flowers which are nearly as large as under cultivation. On its native hillsides the flowers are followed by luscious fruit of the size of a hen's egg, sweet, refreshing, and much valued by the people. As a wild plant it would seem indifferent as to soil, thriving in clay or even on the rubbish

heaps of mines, while it is said to flourish nearer the crater's mouth than any other plant found in those volcanic regions. Though in a genus apart, this climbing Lily (for such is its character) comes

in a cool and airy house, the plant being so nearly hardy that perfect success may be secured with no more warmth than is needed to keep out frost. It is best in a border which should be given up to the plant, drained by a bed of stones or clinker, and not too deep, as it is a shallow rooter; in starting small plants it is well to extend the border by degrees, for if much soil is given

at the outset it is apt to spoil. Being averse to change, the plant should not be moved when once planted, and the roots should on no account be injured during the annual top-dressing. When moving is necessary, autumn is the best time. The soil should be a mixture of coarse granite, sand and peat, kept

open by lumps of charcoal, stone clippings, broken sandstone, or small clinkers, the rootlets netting closely round such porous matter. Though a place is often found on a back wall or in partial shade, this is less important where there is abundant air and moisture, and with this care fully exposed plants may be seen in fine health. When in active growth frequent syringing keeps the foliage clean and healthy, but from August, when the plants begin to flower, the amount of moisture may be reduced or the blooms (especially of



THE WHITE CHILIAN BELL-FLOWER
(*LAPAGERIA ALBA*).

very near the Smilax and the Asparagus with the same fleshy root and manner of growth; by the natives these roots are used as a substitute for sarsaparilla.

Under Glass. Where grown under glass in this country it should be

the white kind) are apt to suffer. In early winter when the flowering season is over, the plant should be cleaned and all weakly shoots removed, the border dressed with fresh soil, and a watch kept for new shoots from the base, which are liable to be nibbled by slugs or woodlice and spoiled at the outset; this may often be saved by placing a lamp-glass or small trough of water around the springing shoots as a protection. Once started the stems grow fast and should be trained upon strings (which are better than wires) stretched in their line of advance and not at right angles, so that the shoots may follow them in their own way. It is possible to secure flowers, either in clusters or in long trails, as may be desired. If garlands are wished the shoots may be left to lengthen at will, but if the strong shoots are pinched after running until they begin to show broad leaves, clusters of many flowers are then formed upon the side shoots, as many as a dozen blooms sometimes hanging together. Plants may be raised from seeds or layers, seedlings being more vigorous but not coming true. The seeds should be sown as soon as ripe, in shade, and a warm house, but old plants do not fruit freely save in fine seasons or when fertilised. Layers are prepared in the autumn, strong shoots being tongued (as for Carnations) just below a leaf, and then pegged down and slightly buried on the newly-surfaced border; they are slow in rooting, taking from one to two years, and when separated must be handled with great care to avoid hurting the roots. If neglected, the *Lapageria* is very subject to insect pests of all kinds,

from which it is freed with difficulty when once attacked; even the grub of the vine weevil sometimes causes much mischief before detected. In a fully exposed house liable to sudden drought from bursts of sunshine, it is not uncommon for the leaves to wither at the tip, and lose their fine gloss of health during hot weather; the remedy is to give all the air possible, with abundant moisture. Old plants are sometimes seen in pots, but are never so fine, more heat and constant feeding being necessary to induce anything like vigour where the roots are closely confined. In healthy border plants shoots as thick as the finger and many feet in length are often produced in a season, and though not in themselves the best for flower, such main stems favour the wide spacing, which results in a fine display of bloom upon the side shoots. A hundred or more flowers on one shoot is not unusual, though they are mostly hung all along its length with a white or rosy bell in every leaf-axil, the number sometimes increased to two or three, or more rarely in large bunches of many together.

In the Open. In many parts of the south-west of England and in Ireland the *Lapageria* thrives in the open, mostly upon walls facing north or north-west, for though it will grow in other aspects the colour of the flowers is spoiled by much sun. Quite in the north of Wales, near the sea-coast, there are fine plants growing in this way, unprotected save in the hardest winters and flowering freely far into the autumn, while in Cornwall and Devon fine established plants are rarely without flowers.

Encouraged by the open winters, now so frequent, more use might be made of the Bell-flower in this way, vigorous plants being raised from seed and the best grown on. It would also be a pretty variation from the usual plan of growing them on walls to try them rambling freely as in their native wilds, where the trailing sprays hang as rich garlands from the lower branches of the trees and peep out from every thicket. The flame-flower (*Tropæolum speciosum*), its companion in Chili, does so well in this way that in mild districts near the coast the *Lapageria* should be tried under the same conditions.

As to Kinds.

There are white and rosy forms of the Bell-flower and varieties of both kinds. That known as *Lapageria alba* is grown in two forms, one far superior to the other in size and beauty of flower, and broader in the leaf. Though usually freer and more vigorous in growth than the red kind, its flowers are more delicate; and it is scarcer in gardens, because rarely coming true from seed it has to be raised from layers and is more costly as a result. Its flowers are beautiful, especially when in clusters, and are much grown for cutting. When out of flower it may be known from the red kind by its rounder leaves of lighter green.

The red kind, *L. rosea*, varies much in its seedling forms, and only plants of the best kinds should be grown, those of rich colour and open mouth being preferred to the many pale and inferior kinds to be had cheaply. There are several named varieties, the best being *superba*, or the *Nash Court variety*, a

plant of great vigour and almost constantly in flower, with leaves like a fine Ivy and large flowers 4 inches long, often in clusters and of deep colour, mottled with paler blotches on the inside. The *Warnham Court variety* is also good, with flowers of great substance, short in the tube and of deep rose-red, thickly scattered with points of greyish-white within. The *Knoll variety*, again, has large and long flowers, good in texture and widely reflexed, flowering freely even upon small twigs; other old kinds are *rubra*, with good deep flowers, and *Fisher Holmes*, good in shape and colour. Double flowers of many plants sometimes occur in both colours, but their form is far from beautiful.

STATUEMANIA.

By common consent the British statue is nothing to be proud of, and the spread of the statue mania to gardens—public or private—is to be deplored. The place for a good statue is within the protection of some public or other building; a bad one is better out of sight altogether. A witty French writer, M. Harduin, has lately been protesting against this *statuomanie* as he calls it, and says, quite justly, that a bronze or stone statue that fixes the eye in a garden-square is no good substitute for the effect of tree, or grass, or flower. Further, that we have already too many statues in cities. Assuming, however, that people are satisfied with statues as they are, it is surely unnecessary to spot them over the parks and grass plots in towns while there is such an immense choice of sites for these or similar monuments in embankments and bridges, where they could be seen

to the best advantage without destroying the effect of garden or park. There are people who think of the garden not as a living picture of beautiful natural forms, but as a place to show off one of the least worthy phases of human art. In a northern country like ours a statue of any high merit as a work of art deserves to be protected by a building of some kind, as the effect of frost and rain is very destructive to statuary. The scattering of numerous statues of a low order, such as are often seen in Italian gardens, gives a bad effect, and the dotting of statues about the public gardens of Paris and London is destructive of all repose. If a place be used for the exhibition of sculpture, well and good; but let us not in that case call it a garden. In Britain, statues are often made of plaster, and those who use a garden as a place to dot about such "works of art" do not think of the garden as the first of places to show the works of Nature in their natural forms.

As to the artistic value of much of our sculpture, Lord Rosebery, in his speech at Edinburgh in 1896, said:—"If those restless spirits that possessed the Gadarene swine were to enter into the statues of Edinburgh, and if the whole stony and brazen troop were to hurry and hustle and huddle headlong down the steepest place near Edinburgh into the deepest part of the Firth of Forth, art would have sustained no serious loss." Yet this is the sort of rubbish that some wish us to expose in the garden, where there is rarely the means to be found to do even as good work as we see in cities.

In its higher expression nothing is more precious in art than sculpture; in its debased forms it is less so than almost any form of art. The lovely Greek sculpture in the Vatican or British Museum is the work of great artists, and those who study it will not be led astray by the statues in our squares. If we wish to see the results of sculpture in the architect's own work we have but to look at the public buildings in London where it is used, mostly to spoil any architectural grace such buildings should possess, as in the National Portrait Gallery, the Natural History Museum, and the Home Office Buildings. Real artists in sculpture are not concerned with garden design, and sculpture is not the business of the builder or landscape gardener. A statue or two of any artistic value may be placed in a garden with good effect, never, however, forgetting that a garden is a place for life not death.

SONGS OF THE WOODS AND FLOWERS: SPRING HAS COME.

At first the snowdrop's bells are seen,
Then close against the sheltering wall
The tulip's horn of dusky green,
The pæony's dark unfolding ball.
The golden-chaliced crocus burns;
The long narcissus-blades appear;
The cone-beaked hyacinth returns,
And lights her blue-flamed chandelier.
The willow's whistling lashes, wrung
By the wild winds of gusty March,
With willow leaflets lightly strung,
Are swaying by the tufted larch.
The elms have robbed their slender spray
With full-blown flower and embryo leaf;
Wide o'er the clasping arch of day
Soars like a cloud their hoary chief.
See the proud tulip's flaunting cup,
That flames in glory for an hour—
Behold it withering—then look up—
How meek the forest-monarch's flower!
When wake the violets, Winter dies;
When sprout the elm-buds, Spring is near;
When lilacs blossom, Summer cries,
"Bud, little roses! Spring is here!"

—OLIVER WENDELL HOLMES.

FLORA

AND SYLVA.

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[Monthly.

DEGRADED STRAWBERRIES.

THE lovers of this fruit—and they are many—have had full opportunity this season of tasting the sour poor thing as it is known in our markets. Doctors forbid it to their patients and many who venture to eat are ill-affected. The late Sir Henry Thompson used to say to me that of all foods known to mortals the worst to produce lithic acid in the blood was the Strawberry. He of course, like most others, judged from the market kinds, and the question is whether these ill-effects are essential to the fruit or due to our choosing bad kinds. The town public are at the mercy of the markets and their ways; the fruits that look and carry well are those that are always grown—never mind the flavour, the stomach-ache, or saturating the blood with acids. Soft fruits that carry well taste ill. Is it right to encourage this state of things? The markets will have their own ways, but is it well for those who are happy in having fertile gardens of their own to follow the lead of the markets? We may grow better varieties than those commonly grown. The best Strawberry ever raised is Myatt's *British Queen*, and there were other good kinds raised from that, such as *Keen's Seedling*—kinds far

better than the *Royal Sovereign* and others now in use. Even the neglected *Viscountess* was better in flavour than some of those on the market now. The Alpine Strawberry is, in its wild state, a wholesome fruit, as it is in flavour far better than those grown for use, small though it be. Those who have stayed in the south of Europe know the baskets of sweet wild Strawberries gathered on the hillsides by the peasants and brought daily into the markets in large quantities during summer, or they may themselves have plucked the ripe red clusters hanging from the old walls of country lanes. These fruits are the best that can be had for flavour, and are sweet without the sugar which alone makes the market Strawberry palatable, manufactured sugar being also injurious. The neglected *Hautbôis*—another wild Strawberry—is also far finer in flavour than most cultivated Strawberries.

Where from our conditions we are not able to grow the best kinds such as *The Queen*, why not raise Strawberries from seed? I have always felt that the fine flavour of *The Queen* came, not from the Chilian or the Virginian Strawberry, but in part from the *Hautbôis*. That would be an excellent kind to use

in crossing. We have proof in other fruits that variation in kinds means very often variation in quality. For instance, there are Apples that are wholesome and grateful in every way, whether cooked or raw, and others uneatable, no matter what we do to them. There is a difference in kind between the flavour of a ripe *Grosse Mignonne* and the Peaches now grown for the London market. If Myatt of Deptford raised such a delicious Strawberry as *The Queen*, why should not others raise varieties of equal merit and distinction? But the first thing to do is to cultivate *The Queen*. It is supposed to be difficult to cultivate, but I do not find it so. The London market is supplied both from heavy and light soils, and many of those cool soils in the Wealden country round London are excellent for *The British Queen*. The late Madame Elisa de Vilmorin occupied herself much with the raising of Strawberries, and it is so interesting a pursuit that any lady might adopt it. Let it be done, not with the object of raising kinds for the overstocked markets, but with the single object of good flavour, without regard to size or colour. The Strawberries which have had most to do with the flavourless kinds now in cultivation are the Chilian and Virginian Strawberries, but chiefly the Chilian, which is more remarkable for its size than its flavour. It is very desirable to introduce new blood, working more from the *Hautbôis* and crossing it with some of the best kinds, and so we might arrive at something better than the present state of the same large sour Strawberry on every table, and perhaps even get an

“early” *British Queen*. The spoiling of the Strawberry is not an affair of flavour only, although that is the worst result so far. Exaggerated size is no gain but a drawback as no very large Strawberry is ever well flavoured. This year some of the Strawberries resemble the “lights” of slaughtered animals rather than the pretty fruit the Strawberry should be. In no case should we raise kinds less good in flavour than the wild Strawberries of the mountains; the market kinds in cultivation are not so good in flavour. Owners of gardens must rely on themselves entirely in this matter, and if they follow the market, or even the catalogue ways, they will get no forwarder. Shows, equally with markets, are a hindrance, size and colour being thought more of than quality.

THE CAPE FIG-WORT (*Phygelius capensis*).

A HANDSOME native of South Africa, hardy over a large area in England and Ireland. Introduced fifty years ago, it is still an uncommon plant. Throughout the south of England it is one of the finest of late-flowering perennials for gardens of warm soil, and even in Scotland it thrives in sheltered places and against walls; its first flowers open in June, though September and October are the months of its greatest beauty. The flowers are borne in graceful spikes of 9 to 15 inches upon crimson stems, the flowers hanging in tiers with pretty effect and sometimes to the number of thirty or forty spikes upon a strong plant, the hanging tubes of bright red showing an orange-yellow throat. Many of the

leaves hang all the winter in a mild season and are only injured by sharp frost; but even if the stems are cut to the ground, the roots start afresh in the spring. Where space can be found, it is best at the foot of a warm wall or even trained upon it; plants so placed will spread many feet and flower with free-

dom through a long season. Young plants begin to flower when quite small and grow quickly into bushes 3 to 4 feet high and a yard square, glowing with fine colour in the autumn border when flowering shrubs are few. The plant is easily raised from seed, which ripens freely, but the usual way of increase is



THE CAPE FIG-WORT.

from cuttings of the soft shoots or from portions of the root-stock, which often sends out runners. In places where its hardiness is in doubt or where the soil is at all wet, a good plan is to strike a few cuttings in the autumn and winter them under glass in the event of loss during a severe season. Young plants may also be lifted from the border on the approach of frost and, potted up, will continue in flower a good part of the winter. Upon light sandy soils the plant should be mulched and freely watered in hot weather, though under northern skies it is less sensitive to sunlight; on heavier ground good drainage is the first essential, with some protection at the root during winter. Its name of Cape Fig-wort is from a fancied resemblance to the Common Fig-wort, a native plant to which it is (botanically) allied. B.

THE GREATER TREES OF THE NORTHERN FOREST.—No. 17. THE WESTERN HEMLOCK (*Tsuga heterophylla*).

A NOBLE tree, with the vigour of the Pine and the grace of a fern, perfectly hardy, and, coming from cool and wet regions like much of our own country, it promises to be one of the best trees for the British Islands ever introduced. The Canadian Hemlock (*Tsuga canadensis*), which was long the only known tree of this group, while hardy as a Briar, never takes in our country the handsome shape described in the writings of American tree-lovers, and such as I have seen it in Canada. The Western Hemlock, on the other hand, has a free growth in our

country and a good character for its wood, although the bad name of the Canadian Spruce timber has clung to it so long that it has prevented its use even in its own country. The grace of the tree is unsurpassed, and its fine pyramidal form and light leaf-growth make it a storm resister—a good point in a tree for a windy and wet country. It has also another precious quality for us, namely, that of supporting shade. This must be taken with some reserve, because all trees, especially the northern trees, love the sun, but in youth a tree that endures shade is valuable because it can be planted under other trees to vary and to replace them. This quality is, perhaps, all the more precious to us because of the large area of woodland now useless and in need of replanting in districts where the Western Hemlock thrives. So far as it has been tried in Britain it is a very promising tree, and as it comes from a country with a good rainfall, may be expected to do best in the south and western parts of England, Wales, and Ireland, where the rainfall is heaviest. In my own planting I find it to be fully as free as any Pine in the home counties.

So popular are the Douglas Fir and the Big Tree in our country that few people think of other trees as approaching them closely in stature. This lovely tree rivals them in height, sometimes attaining to 250 feet and even more, with a maximum diameter of 8 feet, the average diameter being about 5 feet, with a smooth, rounded trunk, and small, graceful branchlets.

Area. The Western Hemlock extends from Alaska south-

ward to Marin County, California, and from the coast region in California to Southern Oregon in the southern por-



WESTERN HEMLOCK SPRUCE. (Engraved for "Flora" from young trees in Lord Selborne's plantations at Blackmoor, Hants.)

tion of the belt, and eastwards to Montana in its northern part. The first mention of the species occurs in a published account of the voyage of Admiral Vancouver, an English navigator, who visited Puget Sound in 1792. In July of the following year, Alexander Mackenzie, the first white man to cross the North American continent, saw it in latitude 52° on the coast of what is now British Columbia. A description of the tree was published in 1814 in the Journal of the Lewis and Clarke Expedition, which passed the winter of 1805 near the mouth of the Columbia River. The distribution of the Western Hemlock indicates clearly its chief requirements to be a cool and moist climate. Western Washington and Oregon, where it reaches its best development, are divided into three longitudinal belts, each with distinct characteristics of soil and climate. The western strip, between the Pacific Ocean and the Coast Range (which becomes the Olympic Mountains in the north), has a fertile, usually clayey, soil, and rainfall of over 70 inches. Between the Coast Range and the foot of the Cascades lies a belt which, protected from the moist sea winds, is comparatively dry; in this belt there is little Hemlock. On ascending the west slopes of the Cascades the change is again distinctly marked. The soil is of either volcanic or sedimentary origin, and the increasing altitude causes condensation of the moisture which escapes the Coast Range and is carried eastward over the central valley. Here the Western Hemlock again appears, and, at an altitude of from 1,500 to 3,500 feet, reaches its best development, and is

most free from insect attacks and from disease. The culture of the tree seems easy, as it is an abundant and constant seed-bearer, reproducing itself freely in its own country under a great variety of conditions, even sowing itself and springing up upon the stems and fallen logs of the forest. The trees bear seed at from twenty-five to thirty years, and it is often carried great distances.

Wood. The wood of the Western tree is hard, straight-grained, tough, and usually white, although often reddish-brown in the interior of the tree. This reddening is not confined to the heartwood, but may extend to the sapwood. In its strength, ease of working, and freedom from warp and shake, the Western Hemlock differs greatly from the eastern tree and possesses all the requisites of ordinary building material. In Washington it is largely used for mill-frames. The durability of this timber is still largely a matter of conjecture; there are no recorded experiments, and it has until recently been little used. Probably it has been greatly underrated, and although not a hard wood it has been found serviceable for floors, joists and scantlings, laths, ceilings, newel and panel work, wooden ware and paper pulp, being best adapted for uses which demand ease in working, fine finish, lightness, and considerable strength. For such purposes there will certainly be a demand for it when better known. It takes a high polish, is free from pitch, and when properly sawed shows a beautiful grain, and is therefore excellent for wainscot, panels, and newels.

NAMES AND SYNONYMS OF THE WESTERN HEMLOCK.

A GAME of battledore and shuttlecock has been played with the name of this tree, hence the importance of a good English name to take precedence over any in a dead language. The Western Hemlock Spruce is a good name. To justify his change of name from *Tsuga mertensiana* to *T. heterophylla*, Professor Sargent says: "An unfortunate confusion between the names of the two Hemlock Spruces of western North America has long existed. Bongard first described three species of Pine collected by Mertens in 1831, one of which incorrectly named *Tsuga canadensis* has since proved to be the Western Hemlock, while a second known as *Tsuga mertensiana* has been more recently identified as the Mountain Hemlock or Patton Spruce (*Tsuga pattoniana*). The name *Tsuga canadensis* having been already given to the Eastern Hemlock, we must turn to Rafinesque, the next authority in order of precedence. The tree described by him under the name *Abies heterophylla* points conclusively to the Western Hemlock (no other tree in the forests of Pacific North America answering to his description) and the only course is to adopt his name and call the Western Hemlock *Tsuga heterophylla*, and Patton's Spruce *Tsuga mertensiana*, though such a change of names is certain to prove confusing." *Tsuga heterophylla*, Sargent, *Silva of North America*, Vol. 12, p. 73; Allen, U.S. Dept. of Agriculture, Bureau of Forestry, Bulletin 33; *Tsuga mertensiana*, Carrière; *Abies albertiana*, Murray; *A. Bridgesii*, Kellogg; *A. mertensiana*, Lindley and Gordon; *A. heterophylla*, Rafinesque; *Abies pattoniana*, McNab; *Pinus canadensis*, Bongard; *Pinus mertensiana*, Bongard.

THE PARKS AT MIDSUMMER.

MIDSUMMER DAY—the words suggest clustered Roses, flowery borders, and leafy bowers, so I set forth to seek these charming objects in the only spots reserved to them within the city—the London parks. Battersea Park is not yet in a state to rouse enthusiasm. Save that "Rosary" is marked upon the plan it would be easy to pass through it without noticing its existence. There is here and there a Rambler trying to assert itself, but the pole to which it is trained is more seen than the flowers, and elsewhere the Roses (already weakly from town life) are buried among the Phloxes, Hollyhocks, and Delphiniums which make quest for beauty hopeless. Where there are no perennials there are lines and patches of annuals and "bedding-stuff," and as Battersea is famous for its "bedding" to the beds we turn for

consolation; but the workman spacing golden Geraniums around a mass of Cannas, tells us we are too early by at least a month. And so it seems, for even the finished beds are merely scattered with the usual Geraniums and Lobelias, Fuchsias, Coleus, and Alternanthera, with gaunt Begonias and Abutilons looking so forlorn that one feels almost glad that so many have given it up at the outset and lie brown and withered. "Come again in about a month; there are two great houses, each 130 feet long, full of Palms and things we shall be putting out directly"—and then you divine the meaning of the gaping scars upon the grass at measured distance, which have held the rain and gathered rubbish all the winter. But even the mixed borders are in little happier case at Battersea; for not only are the hardy plants condemned to struggle with the roots of greedy trees and shrubs, but their whole arrangement is spotty and disappointing and the press of bedding-work means neglect for the outdoor things. In order to have any chance at all the tender exotics must come first and have all the best places, so their hardier brethren suffer. Still, a little more boldness and imagination would do much in the mixed border, if only planters would learn to mass in groups instead of dotting, and avoid all plants poor in colour and in constitution.

St. James's Park reaches a higher level, though its merits are mostly negative, with here and there a pretty cluster of crimson Potentilla, a cheery rambling Rose glowing conspicuously across the water, and colonies of Clove Carnation

coming on. Seen from the foot-bridge, however, the new wall at the end of the lake quite spoils the view in that direction. As for the bedding in the new space fronting the palace, surely one might look for something worthier than the pudding-like mass of Rhododendrons in the centre and the rows of red Geraniums dotted with Marguerites that are set out as artlessly as ashes in the nursery yard. And so on to Hyde Park where the Rhododendrons are fine in colour and still thick with bloom, but, this said, there is nothing further to commend. The dismal array of beds facing Park Lane, such as one has seen for seasons past, the same bad plants—variegated Privet, Cupheas, Lantanas, and Alternanthera—all too lately planted to be beautiful even as "bedding"; in fact there are yet arid wastes recalling the months of desolation past. Even where the plants are good—Pinks, Violas, and the like—the planting to shape, and the lack of fit surroundings, are against all good effect; for who can make a flower-picture with a background of spiked iron, and plants set out as no natural plant is ever seen. Hyde Park is so hopelessly bad that with relief we turn away and look for something less crude and childish in Regent's Park. Here at least the shrubberies are better and the grouping carried out with skill. And here we see the first real Roses, and good they are too: *Caroline Testout*, and *Ulrich Brunner*, with a showy group of *Grüss an Teplitz* and others. But here too the fruits of a bad system are seen in beds of Viola and Thrift, with other hardy plants, left to struggle with the weeds as

best they may while the bedding-season absorbs the workmen. Where succulents are grown surely it would be more in keeping to pile together a few rough blocks of stone, around which to group them with at least a semblance of natural effect, rather than to plant each Agave on its own little mound, exactly like its neighbour at a measured distance, and studded round with hosts of fleshy satellites in a manner wholly irrational. Still in Regent's Park there is much that pleases, *e.g.*, the wild Brake growing freely with the shrubs and suggestive of the open country with a breath of Furze-clad common or shady woodland. The shrubberies are fretted into little bays and nooks and straits, by which the green turf gains access everywhere without the fettering border-line. Best of all, the little pool edged with tall yellow Flags, grey Willow, Buckthorn, and towering Rhubarbs upon the farther side; Gunneras, with Arrowheads and Water Iris, Marsh Marigolds and Lilies in nearer view.

The only open words of praise that reached me in a long day's ramble were overheard in Regent's Park, where the nestling Violas, thick with flowers of varied colour, though massed in groups yet flow together without a harsh line; and beside the water, where clustered Lilies and the margin of Forget-me-nots called forth a burst of enthusiasm from a knot of work-girls. For the rest, "come again in about a month" is the sum of Midsummer Day's promise, and that after nine months of waiting—from October to the end of June. B.

SOME OF THE NEWER TEA ROSES, WITH A PLATE OF COMTESSE VITALI.*

THE late Sir Richard Owen used to speak of Lilac time, and Laburnum time, and others according to the flowers of the day; but of all the flower times there is nothing that appeals to the Rose-lover so much as the opening of the new and old Tea and Monthly Roses in June. They are so varied and so refined in colour that no other Roses come at all near them, and the old red Roses, however brilliant and deep in colour, are but as a Christmas show in comparison. The novelties are numerous enough, and even the failures in form are beautiful in colour. To people devoted to these Roses, however, there is enough of worthy novelty to make them interesting, and among those I have myself tried this year and last are some of supreme beauty, of which the following are the most striking for the moment. It is not my aim to describe minutely, for the descriptions are given in most catalogues; moreover, the form and colour of any of these Roses will vary, owing to weather, age, season, and other things of which it is impossible to take account. For instance, the beautiful *Comtesse Vitali*, which we figure in this number, on the day we write this is quite different in appearance from what it was when drawn by Mr. Moon. It is a lovely Rose in many ways, hardy, free and beautiful in foliage and in all ways. I am comparing these Roses with the queens of their race, such as *Marie Van Houtte* and *Anna Olivier*, grown freely in the open air, which is

* Drawing by H. G. Moon at Gravetye Manor.



ROSE COMTESE VITALI

by far the best way to grow them if we want to see their finest colour. *Ami Stecher*, large and splendid in colour, fine in leaf, with flowers of a beautiful dark ruddy crimson. *Comtesse de Ruffi de Roux* is a lovely soft coppery-rose (and this a very feeble description), somewhat in the way of *Marie Van Houtte*, but quite distinct. *Comte Chandon*, a clear yellow, and as good as anything ever seen in that colour. *Mdlle. Emma Vercellone*, a copper pink. *Peace*, a splendid sport of the always excellent *Georges Nabonnand*. *Préfet Monteil*, with a handsome bud and fine flowers of soft sulphur yellow, with a little copper-pink upon the outer petals. *General Gallieni*, a distinct and superb Rose, difficult to describe; a splendid red with a copper lining, fine in flower and in every way. *Madame Charles de Luxe*, a very handsome pale Rose, a singular mixture of lovely colour with rich yellow shadings within. *Jeanne Philippe* is, perhaps, the pick of the basket, a lovely bright buff colour with streaks of dull red on outer petals, a free grower, and a noble Rose in all ways. *Mdm. René Gérard*, soft peach colour. A promising Rose, but perhaps not quite so notable as some of those named. *Mdm. Ravary*, a fine and distinct Rose in copper-orange, with bars of pale dull red outside, colours to which it is impossible to do justice in words.

Grande Duchesse Anastasie, a good flesh colour, but, as judged to-day, without the great buds and the distinct character of some of those before named. *Franz Deegen*, a beautiful pale yellow Rose; very promising. *Comtesse de Cayla*, a rich, brilliant, coppery-pink as nearly as words can describe it. *Emilie Charrin*, clear, bright, flesh-pink. *Progress* is a beautiful apricot colour, but not yet seen enough to speak fully of its habit and vigour. *Principessa di Napoli*, a



ROSE COMTESSE DE BARDI.

starry flesh colour. *Comtesse de Bardi*, a lovely Rose, reminding one of *Marie Van Houtte* and yet distinct. *Salmonia*, a fine Rose, looking a little like *Papa Gontier* on the day we write and with fine odour. *George Farber*, a large Rose suggestive of a China in colour, but as we write without any buds; a large and vigorous plant. *Mdm. Ernestine Verdier*, a flower of bronzed-flesh colour and a good Rose. *Max Buntzel*, a pale red with much copper shading within; a fine bud and a plant of good vigour.

Margherita di Simone, a curiously pretty Rose of rather bright flesh colour with a distinct yellow base to the petals inside. *Marianne de Rothschild*: this, after a two years' trial, proves to be a noble Rose, like a great flesh-coloured monthly; handsome in bud and of vigorous habit. *Professor d'André*, a fine flesh colour with the inner part of the petals yet paler; vigorous and promising. It should be noted that these are all thus summarily described in one afternoon and are almost the first blooms of the season, some of the kinds, of which we think highly from last year's trials, not yet being in flower. R.

THE HARDY ACANTHUS.

THOUGH fine-leaved plants are common enough in summer many of them are soon shabby, and the list of perennials holding fine foliage throughout the summer and autumn is not a long one; if for this reason alone the *Acanthus* deserves a place in all British gardens. They are plants of southern Europe, but throughout the south and west of Britain and Ireland are rarely injured by frost, and even when the leaves are damaged in sharp winters, the roots escape. If well planted and nursed a little at the outset (growth for the first few seasons being slow), when well established they need little further attention, gaining in strength and beauty every year. Given good soil, they may be finely grouped in half-wild spots and allowed to spread at will, the bold deeply-cut leaves being fine in effect at all seasons and the long spikes of white and rose or purple flowers coming as an added charm upon old

plants. In the Mediterranean region the *Acanthus* fills many a shady dell, spreading into dense luxuriant masses and becoming a mere weed in many gardens from the seedlings which spring up in all directions. There are few finer effects than that of their great leaves and clustered flower-spikes in the half-wild spots they love to make their own.

Even in parts of Devon, Cornwall, and other southern counties, the hardier kinds are quite at home, forming tufts of many feet across with spikes 5 feet high thick-set with flowers. One such spot I call to mind, where the Broad-leaved *Acanthus* disputes place with clumps of Plantain Lily of the noblest vigour, with here and there a giant *Rhubarb* or *Gunnera* beside the water, and colonies of the tall Japan *Anemones* in rose and white, all crowding one another in friendly rivalry. Grown with such plants and amid half-wild surroundings its beauty is better seen than in the mixed border, though here and there in the angle of a lawn it may be used to advantage or planted as a bold relief to the unyielding outlines of the masonry common upon terraces and house-fronts. Strong tufts may even be used like the Plantain Lily to grace the pillar-vases often seen in the formal garden, and, provided there is no lack of soil or water, few plants are more effective. Grown in pots for indoor decoration there are few things give better results in rooms and window-gardens, remaining beautiful season after season with little care and living on even in gloomy and ill-ventilated places that would be fatal to most plants.

Culture.

To flower well in this country they need to be in light well-drained soil and in an open sunny spot, with some shelter if possible, and to be planted in spring in order to get some hold before winter. In many gardens of heavier soil — such as strong limestone marls — the *Acanthus* grows well but is less free in flower and needs deep drainage with some protection, at least until well established. Strong roots may be divided in spring or young plants may be grown from root-cuttings, or seed raised in gentle heat; as generally practised these ways are slow, but in Paris, where the *Acanthus* is grown in large numbers for market, fine plants are grown to a useful size in a few months and are in great demand as window plants.

Kinds.

There are many species of *Acanthus* with only slight differences in point of effect, consisting mainly in modifications of leaf or flower. The hardy kinds commonly found in gardens are:—

GRECIAN ACANTHUS (*A. Caroli-Alexandri*).—One of the latest hardy kinds, a small grower with only a few narrow leaves in a loose cluster, and standing from 12 to 18 inches high; dense spikes of flower during spring, white suffused with rose. Greece.

STATELY ACANTHUS (*A. candelabrum*).—A plant of uncertain origin, very handsome in bold masses, and doing well in a moist spot even when in partial shade, or grouped at the foot of limestone boulders in the rock-garden. It is a strong grower, with leaves of intense green, flowering in autumn.

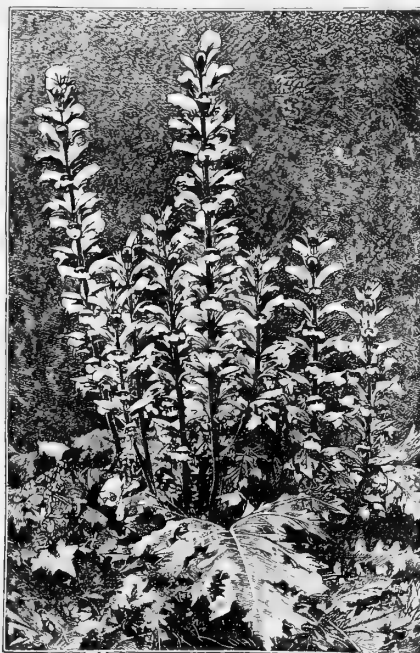
SPANISH ACANTHUS (*A. hispanicus*).—An old kind which has almost died out of northern gardens, of medium growth (2 feet), with broad deeply-cut leaves of glossy green and spikes of white flowers.

LONG-LEAVED ACANTHUS (*A. longifolius*).

—A bold distinct plant and one of the hardiest. Its leaves are long and narrow, gracefully arching, and of bright green; the flowers, of purplish-rose surrounded by reddish bracts, are borne upon short spikes of 2 feet in early summer. Dalmatia.

COMMON ACANTHUS (*A. mollis*).—The common Italian species, of free handsome growth with dull green leaves cut into broad waved lobes, and loose spikes of rosy-white flowers.

BROAD-LEAVED ACANTHUS (*A. mollis latifolius*).—A variety of the last but larger, handsomer, and hardier, with very large leaves of dark green, finely cut and glossy, often remaining good all the winter. Stout flower-spikes of 4 to 5 feet during July and August, with



ACANTHUS IN FLOWER.

white and rosy flowers set thickly and seeding freely. Syn. *A. lusitanicus*. A beautiful form of this kind is seen in some gardens of southern Europe, with a very distinct erect habit and shining leaves of fine appearance, making it the best for single tufts.

BLACK-STEMMED ACANTHUS (*A. niger*).—An uncommon species from Portugal, with shining dark green leaves of 3 feet and purplish-white flowers towards the end of summer.

SPINY ACANTHUS (*A. spinosissimus*).—A handsome kind, very distinct, with leaves of 3 to 4 feet, deeply cut, blistered, and spiny; the spines glistening and acutely recurved. The

spikes, loosely set with rosy flowers, appear in the autumn, but the plant rarely blooms in Britain. S. Europe.

ARMED ACANTHUS (*A. spinosus*).—A handsome plant of fine habit, with much-cut leaves, the divisions of which end in short white spines; the foliage remains fresh all winter in mild seasons. The spikes appear in August, reaching 5 or 6 feet, with small purplish flowers thickly set; leaves and stems slightly hairy. S. Europe.

LIST OF SPECIES.—*Acanthus arboreus*, Egypt; *Barteri*, tropical Africa; *candelabrum* (unknown); *capensis*, South Africa; *carduaceus*, Himalayas; *Dioscoridis*, Syria; *ebvacteatus*, tropical Asia; *hirsutus*, Asia Minor, *ilicifolius*, tropical Asia; *imbricatus*, Further India; *Kirkii*, Angola; *leucostachyus*, East India; *longibracteatus*, Burmah; *longifolius*, South Europe; *longipetiolatus*, Burmah; *mollis*, South Europe; *montanus*, tropical Africa; *niger*, Portugal; *nitidus*, tropical Africa; *polystachyus*, tropical Africa; *rubens*, North America; *spathularis*, North America; *spinossissimus*, S. Europe; *spinosus*, Europe; *syriacus*, Syria; *tetragenus*, Abyssinia; *verus* (unknown); *volubilis*, East India.

THE GARDEN BEAUTIFUL. HOME LANDSCAPE AND HOME WOODS. FURTHER NOTES ON THE OAK.

IN the journalistic English of the day and in many books with much pretence of "science" the use of long words is taking hold so deeply that confusion arises from it. There is a mania for needless definitions, and it is common nowadays to speak of "*sylviculture*" and "*arboriculture*" as if they were different things. In a recent and otherwise interesting book by Mr. E. Step there is an apt example of this tendency in the use of the terms "*mercantile*" and "*æsthetic*" in speaking of two points of view from which to regard forestry:—

"But, after all, it is the trees that have been planted by Nature that give the greatest pleasure, apart from commercial considerations—the lonely Pine, that grows in rugged grandeur on the edge of the escarpment where its seed was planted in the crevice by the wind; the Oak that grows outside the forest, where a squirrel or a jay dropped the acorn, and where the young tree had room all its life to throw out its arms as it would; the little cluster of Birches that springs from the ferns and moss of the hillside. All trees so grown develop an individuality that is not apparent in their fellows of the timber forest; and however we may delight in the

peace and quiet of the forest, with its softened light and cool fragrant air, we can there only regard the trees in a mass. . . . Nature mixes her seeds and sows them broadcast over the land she intends to turn into forest, that the more vigorous kinds may act as nurses, sheltering and protecting the less robust. . . . The timber-producer aims at so controlling the struggle for existence that the survival of the fit is maintained from start to finish. He plants his young trees in regular order, putting in nurses at intervals and along the borders, intending to cut them down when his purpose has been served. The timber trees are allowed no elbow-room, the putting forth of lateral branches is discouraged, but steady upward growth and the production of 'canopy' is abetted."

But forests of both kinds are beautiful—natural and planted—and there is no hard and fast line between the two, although, as in all living things, there is some difference in degree. Nature plants not only the "lonely Pine" but also the vast forests of Canada, California, British Columbia, Auvergne, and many other countries. Some of the most beautiful woods in Kent, Sussex, and Hants are for use only, undergoing periodical cuttings. None the less, whether in effect upon the landscape or examined closely, they are beautiful, though there may be bad as well as good ways of managing them. Oak woods may occupy broken ground (the best place for them), and often no good "rides" are ever made through them, the only means of access being the tracks made by keepers. By planning lines of access in such woods it is easy to open them up in beautiful ways without lessening the value of the timber, the soil of these rides being fully used by the roots of the trees. This plan, if well done, also gives us ready access to the wild flowers of the district, which are often far finer in their effect than those of gardens. I remember being in an Oak wood with the late Robert Mar-noch, who knew as much about gardens from the æsthetic point of view as any man who ever worked in them. It was

rather a close wood of Oaks, with silvery stems rising out of a sea of Primroses and Ladies' Smocks, and he said to me then, "How vain is our gardening, compared with such effects as this," and this was in a wood wholly kept for use and profit. When we come to general effects, the natural and the planted forest are about the same in value, as may be seen in central Germany and Bohemia, where the woods planted for use add much to the beauty of the country. It does not follow that because some foresters space their trees at equal distances that such setting out is necessary. In the forests of the mountains of Europe and America regularity is no part of Nature's plan, the trees coming in groups and often of vast size. There are lessons also in this way in many a natural forest, where I have often seen Pines only a few feet apart, yet splendid in size and stature. There is much to show us both in French and German forests—some quite near us, too, as in Normandy—that their tree beauty, although distinct from that of the trees in park or chase, is none the less precious. In her distribution of trees Nature has the free and varied hand of the true artist, working without formulæ. Her trees are in garlands, groups, masses, and forests, and varied in a thousand ways. As to close massing of trees, no forest planted by the most utilitarian of German foresters is more closely set than the Evergreen Oak woods in North Africa—a country so arid that Europeans cannot endure the mid-day heat—but here and there where encampments, or water, or other cause leads to openings, the beauty of the forest is often

great. As to ornamental trees, there is nothing in any pleasure garden or shrubbery so fine as the effects we may see in forests, both natural and artificial, treated as both may be from the forestry point of view; therefore, instead of drawing doubtful distinctions we should try and show the harmony and unity which exist in all planting. Nor is it always a question of planting young trees in regular order, because upon an immense area of the forest land of the world it is often one of renewing old woods which are mixed as to ages, kinds, and habits, preventing any such stiff setting-out as occurs in young plantations. As to the beauty of the isolated Oaks in the parks and chases of England and in many country seats, it is well to notice that in soils of a dry nature, where the trees are set in the grass as they are in such cases, they suffer in dry years; so that in great parks like Bagot, after a number of such years, we may see their upper parts more dead than alive. That condition cannot occur in the close forest planting which keeps away the grass. In such cases the trees themselves form a mulch which protects the ground from the evil results of hot seasons.

Since writing the first article upon the Oak, the following has come to me from one of the most experienced timber surveyors of the Oak-wooded country south of London:—"In most Oak woods which are sheltered from southwest winds, the young trees (*i.e.*, up to 10 feet cube) would increase from 5 to $7\frac{1}{2}$ per cent. in the year. Trees from 10 to 20 feet cube about 5 per cent., and larger trees not so much—the youngest

trees growing fastest. Hence the oldest trees should be cut, as giving room for the younger ones to grow, and every possible 'teller' should be marked and saved to this end, but owing to the large number of rabbits everywhere it is difficult to get enough of these natural 'tellers' to keep up a proper succession of timber."

* * *

JUNE PICTURES AND JUNE FAILURES.

ON the 21st June I had the pleasure of seeing two pictures, made mainly by Roses and in such simple ways that they tell a story of some import to all who care for and seek the best results that are to be got in our gardens during our all too short—and sometimes cool and wet—summers. The first was at a small country railway station, in borders fenced by wooden palings which were covered by Tea Roses of climbing habit, such as *Bouquet d'Or*, *Mme. Bérard*, and *L'Idéal*. They were fountains of lovely colour, and below these great climbers were bushes of *Grace Darling*, 5 feet high, *Marie d'Orléans*, *Princesse de Sagan*, and *Mme. Lombard*, with a groundwork of Pinks and Rockfoils. *L'Idéal* was the finest plant I had ever seen of it, a tall branched pyramid of coppery-red, 8 feet high, although not in a good place, being partly shaded by trees and a shed. None of these Roses were grown in the way recommended in Rose-lists; they had been mostly struck by the station clerk in his garden among the cabbages. Nor did the soil follow the conventional (and false) rule of clayey loam, as it was simply the gritty, dusty, and free sweepings of the station yard.

The colour effect of the whole was such as an artist might be proud to paint, but only one of rare talent could seize and keep a tithe of its beauty.

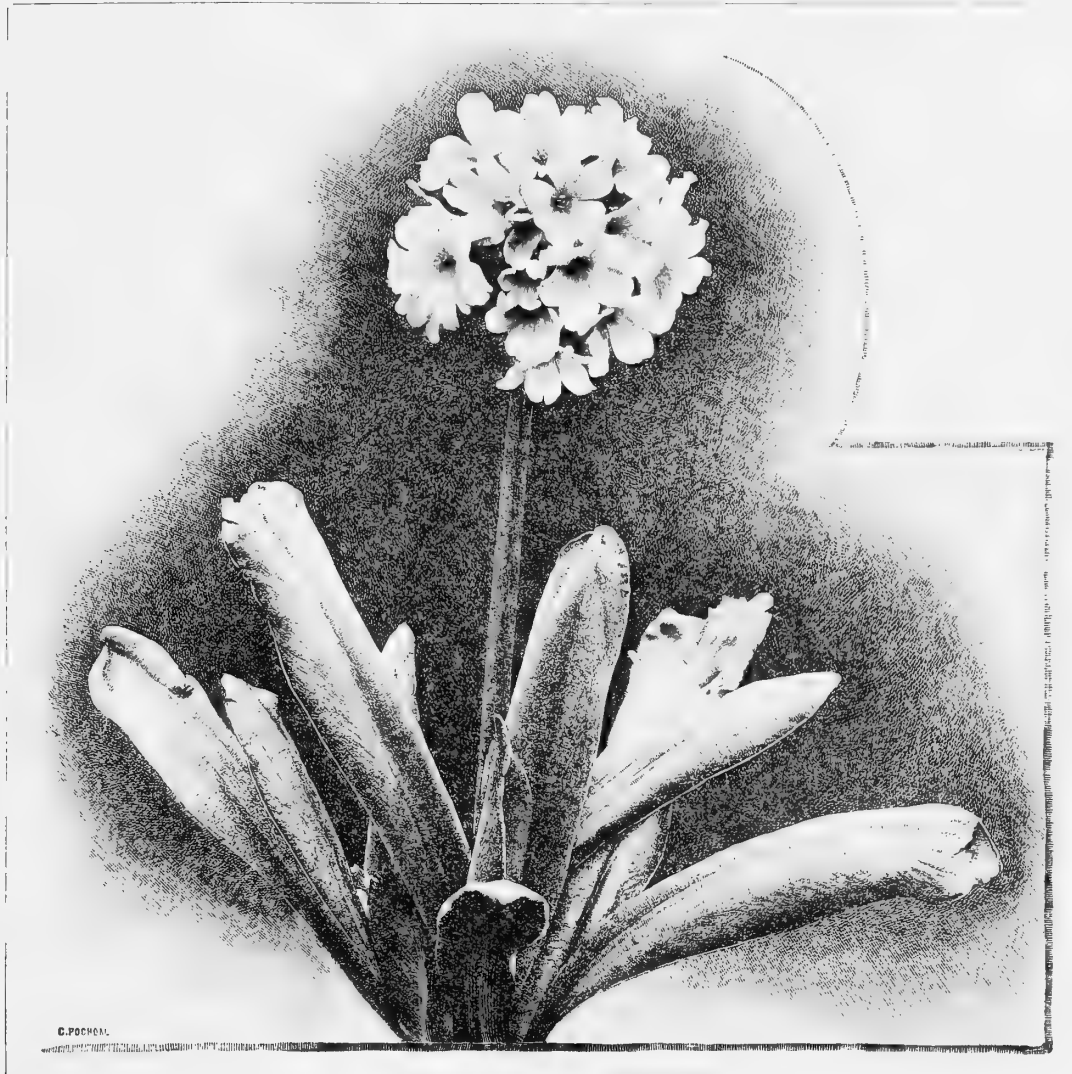
The other Rose picture seen on the same day, was at a sunk fence above which some of the bolder wild Roses had been planted some fourteen years ago and never since touched in the way of cultivation, replanting, or weeding. On Midsummer Day the Japanese Roses in several kinds were already in flower and tumbling over the fence in profusion. The Scotch, American, and other wild Roses were not yet in flower, but the Japanese and our own wild Roses gave a glorious effect, as fine in its way as that of the garden Roses just spoken of. The forming of these pictures was a matter of slight cost, while the result was far more precious than that from tender plants put out at this time of the year. In many gardens, especially of the midlands and the north, the bedding plants were not all in place at that very date, and even in place their effect was ugly and the beds almost bare. It would be hard to find a better illustration of the costly, wasteful, and inartistic system of decorating our cold northern gardens with tender plants. On the same day, a friend went through the London parks, with the result which is given in another column.—ROSA.

PRIMULA DEORUM.

It has given me much pleasure this spring to flower this rare *Primula* for the first time. My plant—the subject of the engraving—had one flower-spike about 8 inches high, bearing twenty blooms, while the surrounding leaves were only

some 2 inches shorter than the spike. Its colour, a fine purplish-violet, is very striking, assuming in different lights a redder or a bluer shade, which is due in part to the transparency of the petals. I had much difficulty in securing the plant, but in the early spring of 1902 I was fortunate to get one from Herr

adding that while perfectly hardy with him he found it a difficult plant to keep in health. By planting at the base of a stone with a broad top sloping towards the plant, it receives more moisture than would otherwise be the case. It has passed the winters practically without protection, save for a month or two during the



PRIMULA DEORUM. (Engraved for "Flora" from a photograph by Mr. J. C. Ruddock, Alnwick.)

F. Sundermänn of Lindau, and at once planted it in sandy loam upon the open rock-garden, in a pocket facing due north and at the foot of a large flat-topped stone. Some years before, Herr Max Leichtlin had kindly told me something as to its habits of growth among the grass of the moist mountain meadows,

dampest time when I tilted a pane of glass against the stone to ward off heavy rains, though open to the air at either side. To my mind it is a very fine plant, which promises with age to become yet stronger and more beautiful.

Primula deorum was found by Velenovsky in 1889, growing at a height of

8,000 feet upon Mount Rilo in Bulgaria, thriving in moist grassy places just beneath the snow-line. Its leaves are slightly fleshy, covered upon the upper surface with minute glands, and with viscid gum upon the dark-coloured flower-stem, bracts, and calyx.

W. T. HINDMARSH.

Alnbank, Alnwick.

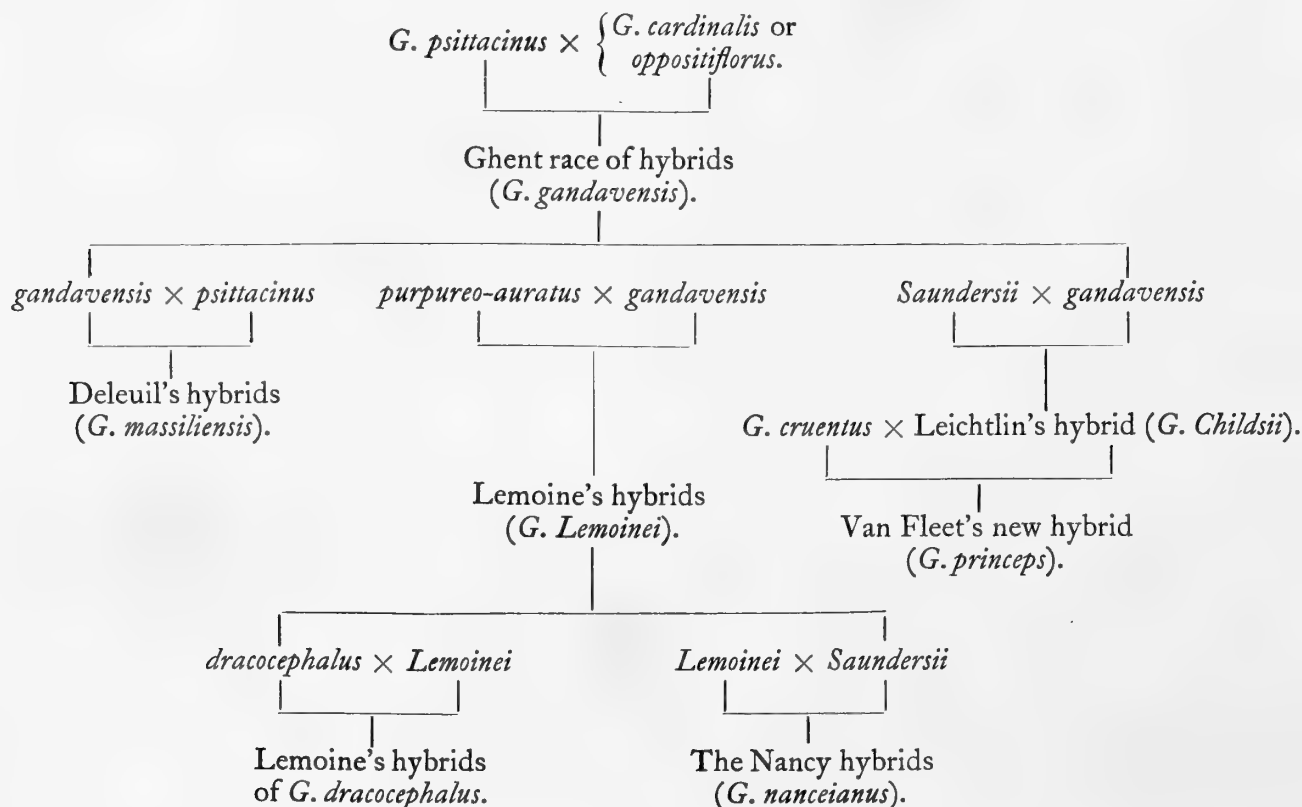
HYBRID GLADIOLI, NEW AND OLD.

Gladiolus princeps is the latest gain amongst the many hybrids of this gorgeous family. Four distinct species have united in its production, as may be seen by reference to the explanatory table of its descent, which shows at the same time the origin of the other great strains of hybrid Gladioli, to which is due the present place of these flowers in gardens.

Though it is rare to find records of crossing so complete as with the Gladioli, there is at the outset a doubt as to the parentage of the Ghent race of hybrids (*G. gandavensis*), from which all the rest have sprung, and which no less an authority than Van Houtte declared to come from *Gladiolus psittacinus*, and *G. cardinalis*. In opposition to this it is contended that

not only have later attempts completely failed to reproduce this result, but that by crossing *G. psittacinus* with *oppositiflorus* plants identical with *gandavensis* have been obtained. This point, then, must be left for fuller knowledge to decide, and it explains why in our table *G. gandavensis* appears as coming from *G. psittacinus* crossed either with *cardinalis* or *oppositiflorus*. Again, some writers have inadvertently declared *Gladiolus Childsii* to be issue of *Nanceianus* and *gandavensis*, but upon the authority of M. Max Leichtlin, the raiser, it would appear that *Gs. Saundersii* and *gandavensis* are the true parents, thus linking *G. Childsii* closely to *Saundersii*, a point of some importance in settling the origin of *G. princeps*. It is also interesting to gather that M. Krelage regards *G. Childsii* of Leichtlin as identical with *G. turicensis* of Froebel, and upon enquiry they are shown to be of the same but inverse parentage, the seed and pollen parent being transposed. But in any case, no doubt exists that from *G. Childsii* the new plant has come.

To America, in the person of Dr. Van Fleet of Little Silver, this new gain is due. Its other parent, *G. cruentus*, was first discovered many years ago upon the slopes of the Drakenburg, in Natal, but as of difficult culture it has remained rare in Europe, being perhaps nowhere



so well grown as with M. Leichtlin, who sent plants to America. There they thrive with Dr. Van Fleet, who succeeded in crossing it with *G. Childsii*. The resulting hybrid, *Gladiolus princeps*, exceeded all expectation. Its flowers of crimson-scarlet are rich and intense in colour, widely expanding, of great size and fine form. The brightness of the flower is relieved by touches of white, or frequently by a white stripe across the centre of the lower petals, which are very full and rounded. The new plant flowers late in August and September when other kinds are on the wane; this fact alone will give the newcomer an added value. Though expanding in slow succession, and never having more than three or four open at the same time, the size and lasting quality of its flowers do much to atone for this fact. To the present, raisers have failed to induce much variation in colour from the scarlet of the first *G. princeps*, but it is not too much to hope that colours may yet be gained as varied as in the finest strains of hybrid *Gladioli*.—PHILIP DE VILMORIN, "Revue Horticole."

WASTED OAKS.—Some feeble excuse for the general neglect of woodland work and forestry in England may be found in the fact that in continental countries vast forest districts belong to the State and are taken good care of to its profit, whereas here we have little of national forest, and what we have is of no great credit to us. The training of many of the best men for State forest work has its effect also on private property, and the landowners in Germany think it worth their while to know something of their woods in order to take care of them. But apart from forest work proper there is a form of tree waste which consists in letting the fine Oaks of the country die on their feet, instances of which can be seen in many districts of the southern and midland counties. In the north, where the Pine is a better

grower than the Oak, this form of waste is less noticeable. When it is a question of the monumental trees such as the "Beggar's Oak" in Bagot Park or the "Bear Oak" at Penshurst—trees that make the history of the Oak in our country—none can begrudge the care bestowed upon them; but in the districts where we see these precious trees dozens of Oaks may sometimes be seen with their tops perishing and allowed to cumber the ground when long past their prime. This is the case also when the owners of mature woods, pressed for money, cut down their half-grown trees of other kinds. These half-dying Oaks mar the beauty of the wood, chase, or park. The sort of man—not rare—who perpetuates this disgrace, boasting that he never cuts down a tree, probably never plants many trees. This neglected source of wealth is brought forcibly to mind of late from facts which have gone the round of *The Field* and other country papers regarding the sale of Oaks by Messrs. Richardson of Stamford for £100 apiece, the buyer in each case taking the tree with all faults and at his own risk. They were exceptionally fine Oaks of the brown wood sought by cabinet-makers: the price was remarkable, and may remind us of the waste we speak of. There are thousands of Oaks in Britain allowed to encumber the ground beyond their time of maturity, which, if cut down and sold when at their best, would have been a very material aid to their owners, and have enabled them among other things to renew their woods and plant waste and poor ground.

HESPEROYUCCA WHIPPLEI.

AN interesting description is given by Mons. Allard, of Angers, of the recent flowering in the open air of one of these beautiful plants of California. The plant was raised from seed in 1884, and after growing several seasons in a tub was finally planted in a dry corner at the foot of a sunny wall. Sometimes lightly touched by frost in severe winters it none the less made good progress, and in May of last year began to throw up its flower-spike, which in three weeks reached a height of over 9 feet, with a superb mass of nearly 2,500 flowers. Though this is small as compared with spikes often seen in its home upon the scorching plains of western America, the production of such a spike in Europe is worthy of record. The *Hesperoyucca* seems to occupy a place between the *Agaves* and the *Yuccas*, resembling many of the first in appearance, and like them dying as it blooms, while the flowers themselves are nearly identical with those of the *Yucca* group. The flowers, carried upon the upper part of the spike, are of creamy-white touched with violet upon the outside of the petals, and with a penetrating odour of orange-flowers; they open in long succession, beginning at the base of the column, each flower lasting in beauty several days and closing partially during the daytime. A curious feature of the rapidly growing spike is its great sensibility to light, shown in the marked dip of its growing point toward the sun, whose path across the heavens is followed by this mute pointer throughout the day, changing in direction from hour to hour. Six perfect fruits in the form of fleshy capsules of about an inch long appeared upon the upper part of the spike, without any of the care necessary to induce fertilisation with most of the *Yuccas*. The leaves of the plant spring from a low woody base and are about 2 feet long by nearly an inch wide, edged with tiny saw-like teeth and terminating in a sharp brown point. Normally arranged in a dense bristling rosette, they part on each side from the centre to give passage to the flower-spike, and rapidly wither away as it develops. It is a common plant among the mountains of the coast range in southern California and is a glorious sight when in flower; a variety *violacea* bears flowers shaded with purple.

THE WHITE WILLOW IN SUFFOLK.

THIS engraving was intended to illustrate our article on the White Willow (see *FLORA AND SYLVA*, Part 11), but was not ready in time. The illustration is from a picture by Mr. Moon, sketched near Brandon, where White Willows grow in great numbers. It is a poor, sandy soil, and one not likely to suit the trees so well as heavy bottoms, but there are depressions here and there with a wet subsoil in which groups of Willows thrive and attain a stature of sometimes 80 or 90 feet, with a beauty which, perhaps, no other native tree can surpass.

A NEW WILD APPLE (*Pyrus Doumeri*).—This new tree has recently been found by M. d'Andre in Annam, upon the outskirts of a mountain forest at an elevation of 6,000 to 7,000 feet; it is of tall erect growth, with a trunk 4 feet round. Its leaves are of a longer oval and more sharply pointed than is usual in the Apple, and though the fruit is similar in shape and flavour to the wild Apple its pulp contains many of the hard woody masses often found in the Pear; its flowers are still unknown, so that to which section of *Pyrus* it belongs cannot for the moment be determined. Its interest lies in its possible value as a stock for grafting western Apples and Pears, and enabling them to be grown nearer the tropics than is now the case. The table-land on which it grows is near the frontier of Cochin China, and has been secured as a health station for Europeans, and is fitted, as to climate, for the culture of temperate fruits which are to be tried upon this new stock. For this purpose *Pyrus Doumeri* may prove of economic value in other regions bordering the tropics so that the experiments to be made throughout the French colonies should be watched with much interest by our own colonial authorities.—*Lyon horticole*.



THE WHITE WILLOW IN SUFFOLK. (Engraved for "Flora" from a picture by H. G. Moon.)

THE WILD GARDEN IN SUMMER AND EARLY AUTUMN.

ONE who studies the nature of his soil can make a lovely spring garden almost anywhere. Even places which have to be mown early in summer may be used for early flowers,—Greek Anemone, Crocus, and Scilla. The slow but lovely birth of our spring helps to this, much as we complain of our spring weather, and only those who have a genius for misunderstanding can fail with the spring wild garden. The summer wild garden is another thing and a much more restricted one, as the materials for it are not so easily obtained; and, moreover, we have the real flower-garden to enjoy in summer and autumn, and so are less dependent on the charms of the wild garden. But there is a good deal to be said for the summer wild garden notwithstanding, and in many country places opportunities occur for carrying it out in an effective way.

A subject of this sort may often be best discussed from the point of view of an individual instance, and we may state the case of a friend who has a small wood of stately summer-leaving trees beyond and away from the flower-garden and separated from it by a moat; trees offering cool shade on hot days, in view of the lawn and flower-garden, and yet cut off from them by water. The question is put to me: How should we deal with it as a wild garden? It is a good valley soil, always an advantage where we deal with the greater herbaceous plants, and it has also the doubtful gain of floods in winter and sometimes in summer. Such places are only fitted for hardy plants,

and they are often wholly taken up with Briars, Nettles, and plants that take the place of undergrowth in English woods. Apart from the beauty of a wild garden in such conditions, we have to consider its advantages as an “outpost” in placing many plants that cannot be well grown in the garden itself, and among them I know nothing better than the Day Lilies (*Hemerocallis*). These increase almost too rapidly in many garden soils, and some I have put out are a yearly source of joy to anyone who cares for good effects. The rich colour is seen to greater advantage with grass and in half-shady places than in gardens, where they have a stiff look and a far too short bloom. Now in a half-shady place the bloom is prolonged, and if in a northern aspect it is all the better for them. Some of the great Asiatic and Amour plants, and also some European plants, are so vigorous that if once allowed in a garden they are almost impossible to get rid of. Near water and in rich ground I know nothing better than the Giant Knotworts (*Polygonum*) of China and Japan. They are a pest in the garden if anyone is so unwise as to let them in; but put them down beside water or near a wood, and they give fine colour in autumn and not unattractive flowers. Very graceful, especially near water, is the Rosy Loosestrife (*Lythrum*), a superb plant of the autumn, always happy in moist ground and growing very well in water; in those raised from seed there is an interesting variation in colour. We may find things for our purpose among our native plants, amongst others the “French Willow” (*Epilobium*), both the wild kind which

adorns our woods and heaths, and its white form—an elegant plant. In any warm soil these are a pest, but in the summer wild garden they are beautiful and quite in place. With them may be grouped the best of the Golden Rods (*Solidago*), which are rubbishy for a garden, yet, if put in rough places, are very good for a time.

Among the prettiest plants I have seen wild is the Red Bergamot of Canadian woods. It is quite hardy with us, and there is no reason why it should not take its place in the summer wild garden, as it is fine in colour, fragrant, and free upon warm soil, or, indeed, upon almost any. The tall Phloxes, too, may well take their place in the moister part of such a garden, and in places where the soil is naturally dry they would give later bloom than where fully exposed in the flower-garden. I have tried these plants and have been surprised to see how well they do in woody places in moist soils, and hold their place among native wood plants. The same applies to the Globe Thistle, a vigorous and distinct plant. Coming now to the great family of Asters, the taller kinds are excellent for this kind of work, especially the one called *puniceus*, which I have grown much and find its large blue flowers extremely effective in autumn, thriving very well near water, in shade, or half-shade: there are many other good stout Asters. Much also may be done with plants of vigorous habit like the Pæonias, for in planting in such conditions we may secure a later bloom, and as they often increase rapidly in the garden we may well have a group of them upon grass

in such a place. Very favourite plants of mine, with great vigour in places they take to, are varieties of the Everlasting Pea (*Lathyrus latifolius*), hardy and of great beauty, especially in the newer shades. These might be placed so as to run through bushes. This brings us to the fact that such positions may occasionally include shrubs also, especially the late blooming Wild Roses, like the American Wild Roses which come in so well after the European kinds are past. The Sweet Alders (*Clethra*) are nice shrubs, flowering in summer and autumn, and fond of moist places. The shrubby Meadowsweets (*Spireas*) are good, and perhaps the best among the late ones is *S. ariaefolia*. Among the shrubs there is an opportunity for scattering graceful trailers, of which there is no lack. One of the best of these is the Traveller's Joy (*Clematis viticella*), which I make rampant in hedgerows, and comes quite freely from seed. Honeysuckles of various kinds and the White Mountain Clematis (*C. montana*) also come in well. The cheaper Lilies, such as the great Tiger Lily and the American Swamp Lily, do well in certain soils and give splendid colour. In districts where native Ferns abound they may be used to give fresh and cool effects, and by bog or streamlet the Royal Fern (*Osmunda*) is always charming. The great Oriental Poppies grow anywhere for those who care for colour, and the *Spireas* love moist places, especially "Goatsbeard" and *S. venusta*. For rambling about brushwood and in rough places the climbing Knotworts are pretty and soon cover much space.—W. R.

THE REV. C. WOLLEY DOD.—We regret to announce the death of the Rev. C. Wolley Dod of Edge Hall—scholar, a master at Eton, and a good gardener. As an able writer upon all matters related to gardening he was a valued contributor to the papers devoted to plants, being one who understood the cultivation of hardy northern plants as few others have done, making them very happy in his garden at Edge Hall.

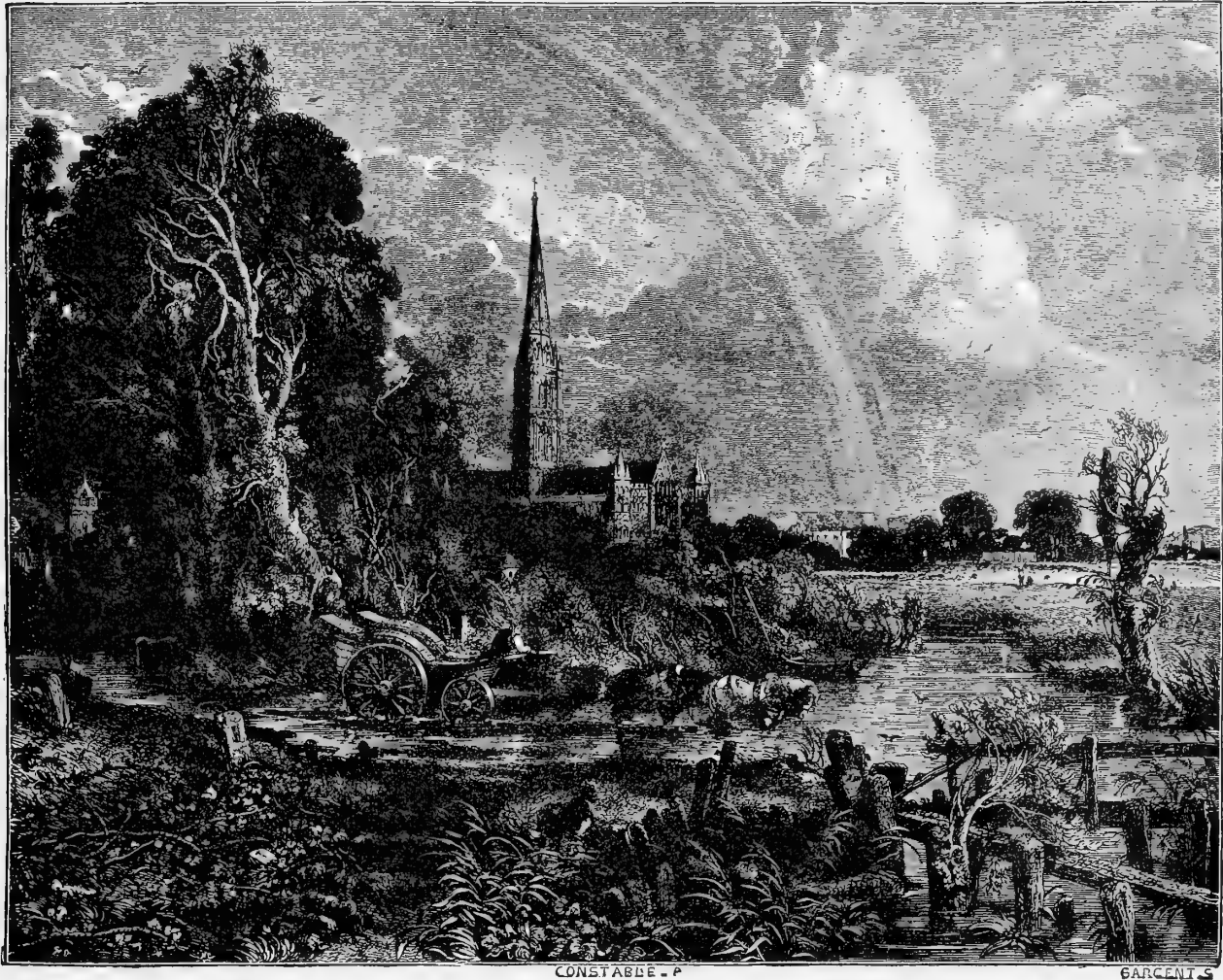
TREES AS SOIL-MAKERS.

LATELY we dealt with the great waste in planting, due to the supposed need of costly drainage, trenching, deep digging, and other heavy labours which are quite needless to secure the growth of forest trees. To the pleasure-ground planter I am aware that these ideas will seem madness; he considers all such costly work essential to the success of his shrubbery. From his own point of view, which is to get a rapid growth in the rampant growers that he usually plants, this may be right; but where is the shrubbery that can show as good a growth as many a woodland or forest? It does not exist. Pursuing the same ideas we wish now to show how well trees will often grow in abandoned scoriæ, mine-rubbish, and other hopeless and ugly earth surfaces. My first lesson in this way was in the foot-hills of Nevada County, California, where goldseekers had washed away the whole surface for over 20 feet in depth, and there I saw vigorous young Pines growing out of the bare surface in fine health. I have had many such a lesson since. But the planter of such surfaces must look a little to kinds and their habits as well as to soil. In the planting of lands of no "quality" or awkward situation the kind of tree is important, as each has its preferences,

and though many hardy trees will grow in almost any situation, it by no means follows that we get good timber from them. Oak, Ash, and nearly every hard-wood tree will grow almost anywhere, and never be worth cutting, Oak being very much affected by the quality of the land, and even where it grows well often not being nearly as good timber as that grown less vigorously. Spruce on a wet western hillside will make growth such as we never see in southern Britain, and our quick-grown Scotch Fir is never half so valuable for timber as the same tree from the poor mountains of western Europe. Rainfall also has much effect on trees, and also elevated situations; in such we might venture to plant trees which would be started too early by the milder climate of the south. If rightly planted in close order when young, trees make their own soil, and often a fine soil it is. In the wood we need no manure cart, and in the hottest years the trees maintain their freshness. Vast areas of European mountains are covered with Pines, while there is scarcely a trace of soil over the ribs of the mountain. Hence, those who are now seeking to plant with a garland of trees the hideous refuse heaps of the Black Country are right in their efforts and will succeed. However poor the land may be when the trees are first planted, the annual layers of fallen leaves soon form a deposit of black mould, between which and the natural soil the roots of the trees are always found in great numbers; the older the wood the deeper the leaf soil. In old Beech and other forests it is extraordinary to what an extent this leaf-mould has accumulated. If it were not for it,

the crops of the same tree could not have succeeded each other on the same ground generation after generation as they have done. Mountains which unplanted would have been almost bared to the rock by constant denudation, have a deep covering of leaf-mould; the same

may be said of Fir and Spruce woods, in which the fallen Pine-needles have formed a bed of black mould. Tree crops manure themselves and enrich the ground on which they grow, a fact that should never be lost sight of in considering the planting of poor lands.—S.



SALISBURY. BY JOHN CONSTABLE.

LANDSCAPE AND WOODLAND PICTURES BY THE MASTER PAINTERS.

PURSUING our series of engravings of landscape pictures by masters in the art, we this time give one of a picture by Constable, who was the first to finely interpret the rural charm of our English landscape, the full effects and values

being given in a fresh and true way. His methods had a marked influence upon the work of great artists like Corot. His best painting was done in the eastern counties, and although not fashionable at present, his work is always good in air, and often beautiful. He passed much of his active life at Hampstead, at that time a rural neighbourhood.

THE CLIMBING LILIES

*(Gloriosa).**

How best to treat a plant is of far greater importance to most people than the history of its introduction or the descriptions of kinds which they do not possess; I therefore begin this note upon the *Gloriosas* with a few remarks as to their peculiarities and culture. In view of the fact that large quantities of several species have been imported from time to time for many years past, and that, nevertheless, *Gloriosas* are far from common in gardens, it is evident that instead of increasing under cultivation like most other plants, a very large number of them die. The reason for this loss also explains that of many other rare plants, more particularly among the bulbous and tuberous-rooted greenhouse plants requiring distinct seasons of growth and rest. The neglect to observe a cool resting period after the stems and leaves of the completed growths have—by turning yellow—indicated that their dry resting season has arrived is a fatal error in the treatment of this class of plant. The secret of success in the cultivation of *Gloriosas* is to keep them dry in a temperate house (on a raised shelf near the glass for preference) from the time they died down until growth begins again in late winter or spring. During this resting season it is best to leave them in their pots, for the long fleshy tubers grow and ripen after the leaves have decayed. In spring they should be turned out and re-potted, singly, or several together, into rather small pots and put in a warm greenhouse to grow. When active

growth has commenced they should be shifted into the large pots in which they are to flower, the one shift being sufficient. *Gloriosas* grow well in good sandy fibrous soil, either peat or loam, or a mixture of both, and their pots should be well crocked. After its final potting the plant should be placed where it is to flower, and some support by sticks or strings given to its slender growth. All the species grow well in a warm greenhouse, though the forms of *Gloriosa virescens* from the temperate parts of Africa will succeed in an ordinary greenhouse or conservatory. But *Gloriosa superba* and most of the other species thrive best in a stove-house. They are very easy plants to grow, and their loss is almost always due to keeping them watered and standing among other plants after they have died down and should be resting. *Gloriosas* seed freely, the seed being left to get well ripened upon the plants and then sown at once. It may be added that these, like most other garden plants of rapid growth, are benefited by occasional watering with very weak liquid manure made by soaking dried cowdung in water with a little soot. Rain water, with a little of this manure added, is good and safe for any garden plant during active growth, but it should be discontinued as soon as the flowering season has passed.

There are many pretty plants of interest to specialists but of little use for general cultivation; this cannot be said of the *Gloriosas*, for all are showy, produce a profusion of flowers, and may be grown against a back wall or under the

* With coloured plate of *Gloriosa Rothschildiana*, from a drawing by H. G. Moon at Holmewood, Cheshunt.



FIG. 10. *ANTHUS* (SCHILLER) 19

roof of the house, and out of the way of other plants. Strings or stakes are the best supports, for only the strongest plants take kindly to wire. When required for decoration the flowers of the Climbing Lilies should not be cut until mature, for if cut before fully formed they last but a short while as compared with the fortnight or so during which they keep good in water if cut when mature.

Area. *Gloriosa superba* is widely distributed in India, Malacca, and other tropical regions, and is also recorded in herbaria from various parts of Africa. But examination of these specimens seems to indicate that the African form is distinct, and that if any of the true Indian species have ever been received from Africa they were introduced at some period. The rest of the species are all natives of Africa, and each varies considerably according to the locality in which it is found, some districts giving much finer varieties than others. There is a vague notion that the Gloriosas are poisonous, but such is probably not the case, for a note accompanying a specimen collected near Lagos by Sir W. MacGregor in February in 1902 bears the words *Ewe-aje*, "used to prevent poisoning," which seems rather to point in the other direction.

Names and Synonyms. These plants have several generic names, although *Gloriosa* has the right of priority. The plant once known as *Clinostylis speciosa* is now referred to *Gloriosa abyssinica*, and the old name *Methonica*, formerly used for several kinds, has also lapsed. As with other sections of the

Liliaceæ, there is a difficulty in fixing invariable features to distinguish the species, and hence botanists (excusably enough) have classed together plants that are widely different in the eyes of the gardener. If Gloriosas were more grown in gardens, and such latitude allowed in distinctive names as is given in the case of garden Lilies, more species would be recognised. Botanists further divide the genus into *climbing* and *dwarf* or *non-climbing* sections, but probably no real distinction exists, for in both sections the plants are furnished with slender, prehensile, tendril-like continuations of the leaves, and it has been proved in the case of *Gloriosa superba*—the quickest climber of the group—that where cultivation of the ground deprives it of the means of support, it assumes the dwarf habit. By inference, therefore, we may surmise that the dwarf kinds, if placed among rank vegetation, would use the means Nature has provided to lift their heads of flower into a better position. Their manner of producing flower gives further proof of this adaptability, for if grown slowly they produce short heads of flower, but when grown quickly in a warm, moist house, the growths lengthen, and the flowers appear at intervals upon the upper parts of the stem.

The following species are known, the first four kinds being more or less climbing and the others dwarf, so far as is at present known:—

Gloriosa superba.—The kind best known in gardens. Flowers with all the segments sharply reflexed and with closely undulated margins. Yellow in the half nearest the ovary; bright red with yellow margin above.

G. virescens.—The most variable in size and colour of flower. Segments curved backwards, stalked, yellow at the base, red on the outer portion. Known also as *G. simplex* and *G. Plantii*.

G. grandiflora.—Flowers often wholly yellow but assuming a reddish hue when mature. Segments more or less undulated. This species seems to be quite ignored by botanists, and the specimens with plain-edged flowered are generally found labelled *G. virescens*, and those with undulate segments *G. superba*. It is probable that a good number of the so-called *G. superba* of the African type might better be referred to *G. grandiflora*, syn. *Methonica grandiflora*, and *M. Leopoldi*.

G. Rothschildiana.—The latest and most beautiful of the genus. The type flowered with the Hon. Walter Rothschild from tubers collected by Major H. B. Rattray in Uganda. The plant figured, which may be regarded as a variety of this kind, was drawn in the gardens of J. T. Bennett-Poë, Esq., of Holmewood, Cheshunt. It was received from Mombasa, and the plant when flowering was not strong. The plate represents the flower in its early stage, when the segments are reflexed; as they mature they become broader and gradually assume the horizontal or decurved position. The yellow colouring seen on the bases of the segments in the early stages of the flower disappears, until it is almost wholly of a bright ruby red.

G. Carsoni.—A rather dwarf species from Lake Tanganyika, with showy heads of flowers, which are yellow at the bases of the segments and red outwards.

G. abyssinica.—A very showy dwarf species from N.E. Africa, which appears never to have been grown in England; the red and yellow flowers are of large size.

G. minor.—A singular little species, only 3 or 4 inches high in the herbarium specimens, gathered near the Shebeli River, in N.E. equatorial Africa.

Allied Plants. Though apart from the

Gloriosas there are two or three other plants closely allied to them and of the same culture, which may well be mentioned in this connection. These are *Littonia modesta*, a pret-

ty African plant with smaller star-like flowers of yellow colour, and *Sander-sonia aurantiaca*, a yet smaller trailing plant with numerous bright yellow, bell-shaped flowers. Both require the same treatment as the cooler-growing Gloriosas, and do very well as basket-plants suspended from the greenhouse roof.

J. O'BRIEN.

Harrow-on-the-Hill.

WESTERN ERYTHRONIUM.

UNTIL Dr. Sereno Watson published his "Revision of the American Erythrונים" in 1891 the various species were much confused. The original types were widely scattered, the descriptions only to be found in many and often rare publications and faulty at that, having been made from dried specimens of a plant which is very difficult to preserve well. Dr. Watson had access to much good material and co-operated with many of the field botanists of this coast, but did not himself see the growing plants of the Western species, so that naturally some mistakes were made, and it is now my aim to bring his work up to the knowledge since acquired. After the issue of Watson's work I began to secure bulbs of the Western species from as many localities as possible, to gather herbarium material, and to study the growing plants in my own garden, while having fresh flowers sent to me from many regions for comparison. I have continued this work since 1891 and have successfully flowered all of the species except *E. montanum*.

Root Formation.

In the Erythrונים the bulb is annual. The bulb produced last summer will this spring

develop the stem and leaves, during the summer a new bulb forms by its side, and by autumn the old bulb will have shrunk to a hard knotty scar, attached on one side to the new bulb, and on the other to a chain of like scars, which form a pseudo-rhizome representing the growth of preceding years. The fibrous roots nourishing the plant are produced at the base of the bulb of last year, so that the rhizome has no connection whatever with the life of the plant. The bulb of *E. montanum* travels in a circle, and I have seen cases where the rhizome was in a perfect spiral of two turns showing eight or ten years' growth. *E. Hartwegii* is the only Western species which produces offsets. It produces a number of runners from the base of the old bulb, and at the end of each of these a new bulb forms; it produces at the same time one large new bulb by the side of the old, as with other kinds. In other Western species offsets are occasionally formed within the sheath of the bulb, but probably only when it is in some way injured, and in any case seldom.

Leaf Characters. The leaves of *E. grandiflorum*, *E. purpurascens*, and *E. montanum* are readily recognizable: in the first two they have no mottling, and in the last they are unmottled with a cordate base. Other species have leaf characters which a keen-eyed gardener will learn, but which cannot be clearly conveyed in words, and in the same way some species have mottlings which are distinctive as learned in the garden, but are not easily described.

Natural Variation. Watson's descriptions convey the idea that

there is a material difference between the size of flower and height of stem of different species, but, with one exception, I do not find this to be true. The herbarium worker cannot safely make allowance for those differences which are due to soil or aspect, nor can he tell whether his dried specimens are really an average of the species in its normal state. In the same species there may be a difference (due to soil and exposure) of 300 or 400 per cent. in the size of plant and flower and the number of blooms. In nearly every instance our Erythrונים are wild in brushy or wooded regions and in uncultivated areas, where, during our dry summers, brush or forest fires are common. Before a fire I have often seen *E. californicum* growing in brush lands to a height of 6 or 8 inches with but a single flower; after a fire it may be 16 inches or as much as 2 feet high, with from four to sixteen flowers. Again, most Erythrונים like a soil rich in leaf mould, and when found in such soil and with other congenial surroundings there is often fully as great a difference as in the instance just cited. It does not follow, however, that in a garden where these accidental differences are wanting all of the species will be of the same size. There are several distinct

Soils. groups as to habitat. All of the *revolutum* forms and *E. giganteum*, for instance, are native to heavy moist soils in shade, and in my garden the finest plants are grown in land so wet that in winter a man would mire in crossing it. *Es. Hendersonii*, *californicum*, *citrinum*, and *Hartwegii* grow naturally in many classes of soil upon

slopes in brush and woodland, and are seen at their best in land well drained and rich in mould, and especially in the crevices of rocky places. *E. grandiflorum* also comes from woodlands, but at high altitudes, and does not take kindly to cultivation in low ground; while *E. montanum* comes from sub-alpine regions, growing in grassy clumps on open slopes and in light soils, and is very apt to do nothing at lower levels. *E. purpurascens* has tastes like *E. montanum* but grows in warmer latitudes. In a garden, where their whims can be humoured, all but *E. purpurascens* are of about the same size, but from data gathered for each form from its own favoured region I feel sure that there is no real difference in the size of the flowers or height of the scape. At its best *E. purpurascens* is but a small flowered plant.

In their number of flowers there is much variation. *Es. giganteum*, *grandiflorum*, *revolutum*, and their varieties, are as a rule one flowered, the exception being two, and the limit three. With *Es. Howellii*, *citrinum*, and *Hartwegii*, five flowers are not uncommon, while *E. purpurascens* has mostly from five to eight. *E. californicum* is often seen in masses with few plants with over three flowers, but in favourable places may have from five to eight, while in its glory ten to sixteen large flowers are not uncommon. All the Western species (with the exception of *E. Howellii*) have four ear-like gibbosities at the base of the inner petals, and these I will term "auricles." They are most prominent in the *revolutum* group and in *E. giganteum*. In one sec-

tion of the genus the style is short and club-shaped, while in another it is deeply divided and the stigmas recurving in the full flower; these differences should be noted, for by them three species can be readily identified. *E. Hartwegii* alone bears its flowers in a sessile umbel, while in other species the flowers (if more than one) are in a raceme.

The divisions of the perianth are similar and of the same colour, and (for brevity and to use a term more familiar to most readers) I am calling both inner and outer divisions "petals" in the same way that I have used the word "bulb" instead of the strictly proper term "corm."

The fine chromo-lithographs of Western Erythroniums would lead one to suppose that in several of the species the flowers are in the form of a broadly spreading bell, and in cloudy or foggy weather this is true, but with the exception of *E. purpurascens* all of the Western species are revolute after the first day or so if they get sunlight, and not only revolute but recurving closely to the stem.

It does not seem to me likely that any new species of Western Erythroniums will be discovered, for the forms are not local and the ground has been well covered; good colour forms, however may yet be found.

(1.) *Leaves never mottled; inner petals auricled; flowers not in umbels; style divided, and the divisions recurving in fully-developed flowers.*

E. GRANDIFLORUM.—Leaves obovate-lanceolate, acuminate below to a narrow petiole, light green and entirely without mottling; stem seldom more than one flowered, but possibly three; petals bright yellow, lighter at the centre. Readily known by its bright yellow flowers

and entire absence of mottling on the leaves; no other *Erythronium* is yellow, although several are in shades of cream. From the banks of the Columbia river at Hood river, only a few hundred feet above the sea level, to the high peaks of Oregon, Washington, and British Columbia, thence east through the high ranges to the Rocky Mountains, along which it grows from British Columbia to Colorado. It grows in Pine woods in a light sandy soil, and flowers very early. A friend who saw it in the high mountains of British Columbia describes it in mass as like a field of yellow Daffodils for rich effect. Watson assigns to it *major* and *minor* forms, but this I believe to be incorrect. To the *minor* form he assigns plants from the Blue Mountains of eastern Oregon, mostly found at a height of 2,000 or more feet, yet it was in this range that the largest and tallest that I have ever seen grew (2 feet). A variety, *albiflorum*, bearing white flowers tinged with green, comes from Pine woods in the plain country of eastern Washington at a comparatively low elevation. The name *E. Nuttallianum* is given to a form of the typical *E. grandiflorum*, in which the anthers are red; it differs from the type in no other way. It was described from flowers from Montana. I only know it in lots from the Blue Mountains in eastern Oregon, in which both forms are mingled.

E. PURPURASCENS.—Leaves narrowly lanceolate-obovate, undulate on the margins, entirely unmottled, but tinged bronze; one to eight small flowers crowded on a raceme; petals only slightly recurved; flowers campanulate; petals light yellow, orange at the centre and tinged purple after a few days; filaments filiform. Easily known by the metallic tinged, but unmottled leaves, and the small crowded flowers. Sierra Nevada Mountains, from 4,000 feet up to sub-alpine regions; also from Plumas to Placer counties, California.

(2.) *Leaves richly mottled; inner petals auricled; style deeply divided after a few days if not on first opening; flowers in a sessile umbel, and appearing as if each flower had a slender stem of its own; bulbs producing offsets at the end of underground runners.*

E. HARTWEGII.—Leaves obovate-lanceolate, with broadly margined petiole; flowers often three to five; petals white or cream with an orange and yellow base. Foothills of the

Sierra Nevada Mountains, where the heat is great in summer and the soil baked; it grows in dry rocky places under brush, and stands more heat and dryness than any other member of the genus.

(3.) *Leaves richly mottled; no auricles at the base of the inner petals; styles short, club shaped, and not divided.*

E. HOWELLII.—Leaves obovate-lanceolate with broadly margined petiole; rarely more than three flowered; petals light yellow, orange at base, and at least the old flowers tinged rose. Readily known from all others by the absence of auricles at the base of the inner petals; most nearly related to *E. citrinum*. The most local of any western species, found in only one limited region of south-western Oregon.

(4.) *Leaves richly mottled in brown; inner petals auricled; style short, club shaped, and not at all divided; filaments filiform.*

E. CITRINUM.—Leaves obovate-lanceolate, with broadly-margined petiole; scape often more than three flowered; petals light yellow with an ovate, bright orange spot above the auricles.

The presence of auricles separates this clearly from *E. Howellii*, and the short, undivided style and the ovate orange spot from *E. californicum*; it could not be confused with any other species. South-western Oregon.

E. HENDERSONII.—Leaves obovate-lanceolate, with broadly-margined petiole; often more than three flowered; petals pale purple with deep purple centre. No other *Erythronium* is of this colour. Southern Oregon, to within forty miles of the coast.

(5.) *Leaves richly mottled; petals auricled; style club shaped, deeply divided, and the divisions spreading widely in fully open flowers.*

E. CALIFORNICUM.—Stem one to sixteen flowered; petals cream coloured with an orange base, and often with a maroon band crossing the petal above the auricles; leaves obovate-lanceolate, and broadly margined on a long petiole; filaments filiform.

It is readily distinguished from *E. citrinum* with its short, club-shaped style, as compared with the long deeply cleft style of this kind. Their colour is the same, but whereas in *E. citrinum* the orange is in an ovate spot, in *E. californicum* it suffuses the base. On the other hand, it can only be confused with *E. giganteum*,

the petals of which are called white by most observers, although really of a cream caste and with a greenish tint, which is lacking in *E. californicum*. Again, *E. giganteum* rarely has more than one flower, while *californicum* frequently has from five to eight. The filaments and auricles, as well as the seed-pod, are also much larger and more prominent in *giganteum*. Northern California, along the coast range from Healdsburg in Sonoma county to Trinity county, California, forming a belt of 50 miles wide and 200 miles long, lying about 20 miles back from the coast. This species, now described under the new name of *E. californicum*, has for years been known as *E. giganteum*, and the only one known under that name. To justify the present change I will give the history of both species.

The original specimens of the true *E. giganteum* were collected by an early expedition, which crossed the continent and reached northern Oregon. The name first appears in *The Botanical Magazine*, with a description by Hooker under *t.* 5714. Under the name of *E. grandiflorum* the same plant is beautifully figured in "Flores des Serres," *t.* 2117. Now *E. californicum* is not to be found anywhere in Oregon, while the true *E. giganteum* in full flower could hardly be overlooked by a party travelling in either Oregon or Washington at just that season. I feel sure that Baker did afterwards recognise my *E. californicum* as distinct, for no species could be better designated under the name of *E. grandiflorum* var. *multiflorum*, scantily described in his "Tulipæ."

When in 1880 Dr. Watson edited "California Botany," Vol. II., he had not yet grasped the clear distinction between *E. grandiflorum* and *E. giganteum*, and gave the name *grandiflorum* to the only Californian species of this section (*E. californicum*).

In writing his monograph of 1891 he amended this, and correctly described *E. grandiflorum*. He had material of the true *E. giganteum* from various points in Oregon, and I sent him fresh flowers of *E. californicum* from Ukiah. He wrote that he had decided that mine was a distinct species which he would name, but evidently was not quite sure of his ground when he did publish, giving the habitat of *E. giganteum* as "from the lower Columbia valley to Sonoma and Mendocino counties, Califor-

nia," thus combining the two species. Now as his best material came from me it is more than likely that the description he gives is of the plant at Ukiah, and it seems indeed to bear out this surmise. A little later I began to receive plants from various points in Oregon and Washington, which were in nature allied to *E. revolutum*, and (accepting Watson's description of *E. giganteum*, made from my own home species, as correct) I naturally considered the Oregon specimens a new form, and named them *E. revolutum* var. *Watsonii*, and by that name the true *E. giganteum* is now known. But upon seeing the original description and pictures of *E. giganteum*, and having plants of my *E. revolutum* var. *Watsonii* from so many points as to prove it to be the only species which the first discoverers of *E. giganteum* could possibly have collected, I saw my mistake. There is not the least doubt as to the original *E. giganteum* being the same as my *E. revolutum* var. *Watsonii*, the plant which I now describe correctly as *E. giganteum*.

It is a question whether the Californian plant would not be better called after Baker, *E. giganteum* var. *multiflorum* (Baker's plant was *E. grandiflorum* var. *multiflorum*). The answer would be, that although there is a resemblance between *E. giganteum* and *E. californicum*, they are of two sections in habitat as well as flower. *E. giganteum* is closely related to *E. revolutum* with its few flowers, its broad filaments, and its liking for cold, heavy soils; while *E. californicum*, with its fondness for well-drained slopes in light soils, and its many flowers with slender filaments is of quite another type.

(6.) *Leaves mottled in lighter shades than in the last two sections; auricles rather more prominent; style club-shaped and deeply divided, with recurving divisions, much exceeding the stamens; filaments subulate.*

E. GIGANTEUM.—Leaves obovate-lanceolate with a broadly margined petiole mottled in light brown and white; scape seldom more than one flowered, tall and stout; petals nearly pure white with a greenish caste, with or without a reddish band above the auricled base; filaments subulate and conniving at the base, much exceeding the stamens; auricles prominent.

Found in all of the valleys of the region west of the Cascade Mountains, beginning at

a distance of about thirty miles from the coast, and extending through western Oregon, Washington, and southern British Columbia, growing in heavy lands along streams and damp spots in woods (see *E. californicum* for comparison of the two). Structurally it is closely related to *E. revolutum*, differing principally in colour. This beautiful plant—the *E. grandiflorum* var. *albiflorum* and *E. giganteum* var. *albiflorum* of various figures and authors—is one of the finest of all Erythroniums. In some sections all the flowers are banded red, while in others this is lacking. In the extreme southern portion of the Willamette valley there is a local form connecting *E. giganteum* with *E. californicum*. It is more of a cream colour, with richly mottled leaves, and flowers earlier than the type; I have named it var. *præcox*.

E. REVOLUTUM.—Leaves mottled faintly in white and light brown; stems seldom more than one flowered, very stout; petals from white tinged purple to purple; style very stout, ovary much larger than in other species, and the ripened capsule fully twice as large as in any except *E. giganteum*; filaments even broader than in the last; auricles very prominent and clasping the ovary. Always found in rather cold heavy soils, often growing on the borders of winter swamps on the edge of heavy timber. The following are distinct colour varieties:—Var. *Bolanderii* (also known as var. *Smithii* or *E. Smithii*) a local form found on the South Fork of the Eel river in Mendocino county, differing from the southern type in seldom turning purple; var. *Pink Beauty* (Hort.), in Humboldt county, California, the species has flowers of a delicate pink shade of colour, but otherwise the same; var. *Johnsonii* (*E. Johnsonii*) from near the Columbia river, the flowers being of a uniform shade of soft rose-pink.

The original of *E. revolutum* was collected by Smith in the end of the eighteenth century, and was said to have come from Vancouver Island; but, as it has never since been found there, it is likely that the specimen was wrongly labelled—an easy thing in collections made from a vessel coasting from California to British America. Plants which I collected in Mendocino county, California, were compared by Dr. Baker with the original specimens at Kew and found to be iden-

tical. For a long time it was a lost species. Watson must have confused it with *E. giganteum*, for in the region to which he refers his *E. revolutum* the former is the only species, while his description of the plant does not agree with either the original descriptions or specimens.

E. revolutum is distributed in a long slender band (in some places only two or three miles wide) beginning in southern Mendocino county, California, never over fifteen miles from the ocean, and extending to the Columbia river; it has not been traced beyond the river, but so far has not been found on Vancouver island or at other British American points. In California *E. californicum* meets it, and in Oregon its territory joins that of *E. giganteum*, but they do not overlap.

At some Californian points *E. californicum* grows on the dry slopes and *E. revolutum* on the wet heavy flats, and they meet on the margins.

The type of *E. revolutum* has been found in southern Mendocino county only. Perhaps fifty miles farther north it gives way to the whiter form, which has long been called *E. Smithii* and later *E. revolutum* var. *Bolanderii*. After another eighty miles a form appears with more darkly mottled leaves and soft pink flowers; this is the *Pink Beauty* of gardens. It is then lost for about 300 miles when it reappears in the deep rose form known as *E. Johnsonii*, which crosses the Columbia river, beyond which the country for another 200 miles is (botanically) only poorly explored and nothing known of it. Doubtless the gap between *Pink Beauty* and *Johnsonii* is filled by intermediates.

(7.) *Leaves cordate at base; petals auricled; filaments filiform; subalpine.*

E. MONTANUM.—Leaves cordate at base, lightly mottled; style deeply divided; filaments filiform; petals pure white.

In the high mountains of Oregon, Washington, and British Columbia at from 4,000 feet to near the snow line, where it grows on open slopes in the tufts of grass and is often frozen stiff when in full flower. After forest fires the plants grow very large and fine, and as described their effect must be very beautiful. I have found it very difficult to cultivate, remaining dormant so late that the leaves are

killed by the summer heat. The cordate leaves clearly mark it, and it is the only really white flowered species.

KEY TO WESTERN ERYTHRONIUMS.

LEAVES not at all mottled. Flowers white or bright yellow; leaves light green. Cascade range east to the Rocky Mountains and along that range as far south as Colorado—the only species of the Rocky Mountains. *E. grandiflorum*.

Leaves not mottled, undulate, of dark metallic green. Flowers very small, light yellow, tinged purple; Higher Sierras, California. *E. purpurascens*.

Corms forming offsets freely at the end of filiform filaments from their base; natives of the Sierra Nevada foothills, from Tehama to Amador counties, California.

E. Hartwegii.

Leaves mottled; inner petals destitute of ear-like appendages near their base; Smith River Mountains, S.W. Oregon. *E. Howellii*.

Leaves mottled; style clavate at top but undivided; flowers light yellow or cream with bright orange centre; S.W. Oregon. *E. citrinum*.

Flowers pale purple with deep purple centre; S. Oregon. *E. Hendersonii*.

Leaves mottled; style deeply three cleft; filaments broadly deltoid, almost conniving around the style; flowers from white through pink and purplish to deep rose; found near the coast line from Mendocino county to the Columbia river, and probably to British Columbia. *E. revolutum*.

Filaments less deltoid although markedly so; flowers creamy or white; on an interior line from Vancouver island and Puget Sound, by way of the Willamette valley, to the Rogue river valley in southern Oregon. *E. giganteum*.

Filaments filiform; style deeply trifid; creamy white flowers; coast ranges of north-western California.

E. californicum.

Filaments filiform; leaves cordate at the base; sub-alpine in the cascades from Oregon to British Columbia.

E. montanum.

REFERENCES.—There have been many good plates of these species published at various times, among which readers may have access to the following:—*E. giganteum*, pictured in Horto Van Houtteano as *E. grandiflorum* (Pursh.), also *Bot. Mag.*, p. 5714, a splendid picture, true in every particular. *E. Hendersonii*, *Bot. Mag.*, good from a botanical standpoint, but not doing justice to the plant. *E. revolutum*, var. *Johnsonii*, shown as *E. Johnsonii* in *Garden*, very true and fine from the artistic standpoint. *E. californicum*, pictured as *E. giganteum*. (This plate bears the name of F. W. Burbidge, lith., but I do not know the original publication.)

CARL PURDY.

Ukiah, California.

EARLY-FLOWERING TORCH LILIES. — One of our readers writes:—"I was in Norfolk for a few days at Easter, and was surprised to see in the garden adjoining the house some large Kniphofias carrying several spikes of flowers which, though small and dwarf, yet showed their red and yellow 'pokers' quite clearly. The garden faces roughly N.W., and is protected for the most part on its other sides. Is it not somewhat unusual, even on the sea-coast, to find Kniphofias flowering so early?—G. C. LEMAN."

BOTANY NOT GARDENING.—The confusion of gardening with botany requires resisting, for the drying and dissecting of plants is quite apart from the art of gardening, which is becoming daily more important to humanity, and that (amongst manifold reasons) even from the scientific point of view. We are glad to see this truth expressed by the well-known writer, Mr. John Burrows, in a recent number of *Country Life in America*:—"The same with botany. I regard its class-room uses as very slight. The educational value of the technical part is almost *nil*. But the humanising value of the love of the flowers, the hygienic value of a walk in their haunts, the esthetic value of the observation of their forms and tints—these are all vital. The scientific value which attaches to your knowledge of the names of their parts or of their families—what is that? Their habits are interesting; their means of fertilisation are interesting; the part insects play in their lives—the honey-yielders, the pollen-yielders, their means of scattering their seeds, and so forth—all are interesting. To know their habitats and seasons; to have associations with them when you go fishing; to land your trout in a bed of Bee-balm or Jewel-weed; to pluck the linnæa in the moss on the mountain you are climbing; to gather Water-Lilies from a boat with your friend; to pluck the Arbutus on the first balmy day of April; to see the scarlet Lobelia lighting up a dark nook by the stream as you row by in August; to walk or drive past vast acres of purple Loosestrife, looking like a lake of colour—this is botany with something back of it, and the only place to learn it is where it grows. Nature under the dissecting knife and the microscope yields important secrets to the students of biology, but the unprofessional students want but little of all this."

SONGS OF THE WOODS AND FLOWERS: THE ISLE.

THERE was a little lawny islet
By anemone and violet,
Like mosaic, paven;
And its roof was flowers and leaves
Which the summer's breath enweaves,
Where nor sun nor showers nor breeze
Pierce the pines and tallest trees,
Each a gem engraven.
Girt by many an azure wave
With which the clouds and mountains pave
A lake's blue chasm.

—SHELLEY.

FLORA

AND SYLVA.

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SEPTEMBER, 1904.

[Monthly.

THE GARDEN BEAUTIFUL. HOME LANDSCAPE AND HOME WOODS. FLOWERLESS FLOWER GARDENS.

OUR sufferings from cold and wet are soon forgotten when we have a week or two of hot summer weather. This year in July friends write to say that they are glad to get away from their gardens, then without a Rose or other good flower, in spite of much watering and costly planting. Surely it is worth considering why we should be landed with such a result after all our talk and efforts. A main cause of the evil is spring-planting and a habit we have got into in our day of depending so much upon tender plants in summer; in many districts plants are not put out until midsummer. If this season be followed by a month or two of wet, no harm comes of late planting, but given a few weeks of hot weather, all the roots being near the surface, in spite of laborious watering the plants come to little. Flower-gardens that depend on half-hardy things must be subject to these troubles, but many of the nobler plants cannot be planted late, which is another reason for going back to the old and real flower-garden instead of the ephemeral ones we now try

to enjoy. If we wish to grow Delphiniums or Carnations, Lilies or Roses, we rightly plant at a season when the roots may get down before the hot weather comes. This summer, in spite of the hot weather, we are rejoicing in the beauty of such plants. Often the choicer perennials might be planted at a better season than they are. If transplanted in the early autumn or soon after flowering, they take a strong hold of the ground before the winter and are not nearly so liable to be hurt by drought. It is important to consider the plants that must be planted in the autumn or winter in order to be thoroughly rooted before the hot season.

Over-draining. Another cause is the incessant draining of every soil, when in seven out of ten years some way of keeping the water in the ground is more to be desired than the getting rid of it. Most flower-gardens, being on well-drained ground, and the beds being usually also raised, they get rid of their surface water and there should be less need for lessening the earth water supply. The neglect of deep cultivation is not so common, and the question is whether something more cannot be done. In the best flower-beds the soil should not be less than 3 feet deep. With

good free soil and the roots active in it in winter and in spring, something might be done in many soils to prevent evaporation by putting broken stone in the lower layer of the soil, under which the roots might find comfort in the heat. In the driest years fields full of flints and stones are less liable to suffer and are often more fertile than the heavy loamy land where we might expect the moisture to remain longer. The flints and stones prevent evaporation. In mountain lands, often subject to great heats, plants, and often fragile plants, are in perfect health because when rooted beneath the stone they are not liable to the quick evaporation that the bare earth gives. In some beds being made for Tea Roses and Carnations this autumn I am putting broken sandstone among the soil of the lower layer so that the roots of the Roses may in the hottest season find a cool retreat; there will be about 2 feet of soil above this so that the stony layer will not be in the way of any planting, and as there are no drains from the beds any water falling on them is stored for spring and summer use.

Is the plan of bare ground a sound one? It is usual to see plants stuck out in the spring which do not cover the ground, so that much of the surface is exposed to evaporation. If we do not mulch—often an ugly process—why not cover the beds with little plants? It is a good and beautiful way, that of covering the ground with two different kinds of life—the surface plants as fragile as may be.

No Roses.

Many a Rose-flowerless garden tells of the mistake

made in neglecting the Rose as a flower-garden plant and growing it rightly as such. At the very time when the gardens ought to be full of Tea Roses with their cool, refined colours, they are bare, this being mainly owing to three things: the practice of grafting everything on the Brier, a June-blooming thing with a tendency to make everything grafted on it short-blooming too; the preference for hybrid perpetual and other short-blooming summer Roses; and the practice (told also in all books upon the Rose) of growing it in a place apart and not as it should be—the Queen of the Flower Garden; so that, instead of Roses massed and garlanded round the flower-garden of a country house, we have tender plants of no effect or character like Lobelias and Calceolarias, plants useless from a natural or artistic point of view. Although trade routine is against us, there are ways out of this if we would only follow them, and it is to give up as far as possible the cultivation of all grafted Tea, Bengal, and China Roses. The China Rose never arrives at its true size or beauty when grafted, and that is the reason we so often see it in a cottage garden far finer in effect than in most private gardens, for the reason that the cottager strikes his cuttings and gets the plants on their natural roots. Bengal Roses, being constant bloomers even into the autumn, should take a part in every flower-garden, the addition of new and beautiful kinds making them more precious than ever. Some of the old kinds, too, like *Cramoisie*, are still among the fairest of Roses. The Tea Roses (which are of the same origin) in many cases die back after

the first year's bloom when on the Ma-netti or the Brier stock. A few kinds do well but the majority perish or dwindle because there is an antagonism in season or growth between our native Brier and the Indian Rose from which these come. The hybrid Teas are also very beautiful, there being no hard and fast line between them and the Teas. Another amendment in practice would be to abolish the unclean and needless custom of mulching heavily with manure. This year I went to see the garden of a lady who had told me she had made a garden of Tea Roses. I found about six half-grown blooms on little starveling bushes and all the beds plastered over with 2 or 3 inches of raw manure. This way is needless and pernicious. To nourish the plants the best time is when preparing the beds, and in the case of Roses on their own roots not to use the heavy soil advised in all the books upon rose culture. We have to fight against not only the trade routine of putting every Rose on the Brier, but also the thousand-times-repeated and false teaching that Roses will only thrive in heavy clayed soils. So long as we grow the Brier in flower-gardens it must have the heavy and rank soil it seeks. This is written on the 25th of July in the off-season of Roses, that is to say, between the early autumn and the summer bloom, and we have thousands of the most beautiful known Roses in flower, while too many gardens are bare. These plants give far finer, more varied, and interesting colour than any bedding plants.

*Fair
Absentees.*

If the Rose be the queen she has lovely maids of honour in the Clematis of the Chi-

nese, Japanese, and European kinds. These endure the heat of the southern counties without suffering, and for their fine colour and unrivalled grace we cannot do without them. Unhappily their usefulness is marred by the nursery system of grafting which leads to their death, so that in many gardens they are not seen in a good state. In old nurseries they are layered, but in the modern nursery the cheaper and easier way of grafting upon some rapid-growing stock is practised, resulting in a coarse growth the first year, but afterwards leading to the death of the plant. This is a serious loss, and our experience is that it can be avoided by getting plants on their own roots. There are three ways of enjoying the Clematis: (1) plants of the larger kinds from layers; (2) seedlings of the same race and therefore on natural roots; (3) the growth of the Clematis of the *Viticella* race and other small wild kinds, good in colour and in habit, and profuse in flower, garlanding trellis-work or pergola, and running freely over shrubs. Some kinds of the *Viticella* group raised by M. Morel of Lyons are varied and pretty in colour. All these, when grafted, are grafted upon their mother-plant (*i.e.*, the wild *C. Viticella*) which ensures a better union, whereas if a Clematis be grafted on a stock of a different origin and nature we may expect trouble. Honeysuckles are a precious group of plants, but, owing to the present ideas of what the flower-garden set before or near a house should be, they are excluded as a matter of course. After the Rose and Clematis the noblest flower of summer is the Carnation. Not the ex-

hibitors' Carnation, with flattened petals and laced edges, giving us a pretty bloom when seen close at hand, but without effect in the open air. Nothing else we know gives such glow and colour to the garden as self-coloured Carnations. Here there is happily no trouble as regards grafting, but in some districts these plants are difficult to keep in health through the winter, and many gardens have no proper stock of them. Where this difficulty is found it is wise to grow a good batch of Carnations every year from seed. If the seed is well chosen the result will be valuable; the plant is naturally biennial, and from seedlings we get a strong plant. Even where the result is poor as regards double flowers and the flowers are almost those of the "wild plant," the effect of the colour will be good. Tree Carnations also, grown in pots and put out in May, give excellent results in vases or beds, and with me enjoy the sun. The taller Phloxes are splendid summer flowers, but to succeed in warmer and drier counties must be in moist ground, which is not always at hand in our prim *parterres*. The highly coloured varieties are essential. The Sweet Pea with its varied colour is now precious for the summer garden. It endures heat to any degree and flowers a long time if the seeds are cut off. Quite regardless of the heat are the Everlasting Peas, and some are good in colour, too. The noblest of the perennials, the Delphinium, if grown in a northern aspect or with a little shade, often flowers throughout the heat of the summer. Among the simple effective things regardless of heat are the blue Cornflowers,

the Lavenders, and Lavender Cottons. On warm beds and banks the best Rock Roses (*Cistus*) are pretty and endure any heat of our land; these, however, should be grouped and not dotted about.

When we come to the waterside, there are the noble Water Lilies, which are now well known though very rarely grown effectively, rats and waterfowl being allowed to almost reduce the bloom to nothing. By the waterside there is nothing finer than the Loosestrifes, which are so easily grown. As undergrowths and carpets the varied dwarf Hairbells are good in colour and habit, and with them are the tufted Pansies, lovely in colour, and though they give way in very dry soils during long continued heat, where there is the least shade they will flower into August even in the southern counties. The stencilled way of laying out a flower-garden quite flat is dead against them, because it deprives them of shade and ourselves, too, of the play of light and shade. There is no chance in the set flower-garden for a delicate plant, shrub, or tree, and none of the varied life of the old flower-garden, but where there is a little variety of surface we can easily give some shade to plants that want it, and so prolong their time of bloom. A young dog chasing a rook has some fun though he never gets his quarry, but the attempt to make a flower-garden conform to any stencilled pattern or flat surface is as vain a chase, while in no way amusing. We shall never get the garden beautiful in that way, and if there were a thousand Kews and Crystal Palaces, or Chatsworths, to illustrate the evil

practice, they will never justify it in the eyes of any one who has felt the charm of a true flower-garden.

In considering all such questions a good way is to see what is usually done and compare it with the best of its kind. In places where these set, flat gardens are in front of buildings, it is well after going the round of the place to have a look at what is still called—by courtesy, I suppose—the flower-garden. It will often be found to be the ugliest, stiffest, and hardest scene in the whole place. And often those who ought to know better—even makers of gardens—say that whatever they may do to make things artistic in other parts of the place in the flower-garden they must conform to a stiff pattern. Even those who make rock-gardens and good mixed borders still cling to the idea that they must put a bad mosaic in front of their windows composed of the meanest kinds of plants known to us. In the old Italian garden, which is often formal in plan, we do not find things done in that way, but that it has shade as well as sun, trees and creepers as well as flowers. What we in England often wrongly call an Italian garden would be impossible in the south, dried up, useless, as well as ugly.

R.

A NOTE FROM CORNWALL.—My *Myosotidium nobile* has 200 flower spikes now, and is making a fine effect. I got the Yellow Clematis (*C. tangutica*) directly it was mentioned in No. 1 of FLORA, and it is now a fine plant with a thrush's nest in the middle of it. Also, I got the Magnolia which was figured in the first number of FLORA, and that, too, is in flower.—CHARLOTTE ROGERS, Burncoose.

THE EULOPHIELLAS.

THE Eulophiellas form a small group of three kinds of stove Orchids, all of recent introduction and still so scarce as to be little known outside a few well-known collections.

EULOPHIELLA ELIZABETHÆ, the first kind introduced to Europe, was named in honour of "*Carmen Sylva*," the



EULOPHIELLA ELIZABETHÆ.
(Engraved for "Flora.")

Queen of Roumania. The engraving represents a fine spike of this handsome plant, photographed in the collection of Messrs. Veitch at Chelsea. The first plant to flower in this country was much

admired and gained a first class certificate from the Horticultural Society of London when shown by Sir Trevor Lawrence on April 10th, 1894. The illustration shows well the form and character of the flowers at about four-fifths of the natural size. The flowers are pure white and wax-like, the backs of the sepals and the flower-stems showing a purple tinge. They are good for cutting whether for bouquets or vases. The pseudo-bulbs are borne at intervals upon rhizomes, with rather narrow green leaves about 3 feet long, while the flower-spikes, of about 2 feet, spring from the base of the pseudo-bulbs. This Orchid was discovered by M. Hamelin in Madagascar in 1890, and three years later he succeeded in bringing home a good stock of plants, but from ignorance of their right culture many were lost and it was some time before their needs were fully understood. Immediately upon

Culture.

arrival the newly-imported plants should be placed in baskets of Teakwood and fixed firmly with clean crocks, the whole being thinly surfaced with sphagnum moss; they should then be placed in an intermediate house and kept well watered. Roots soon appear and the moss and crocks should then be removed and the basket filled to nearly half its depth with well-dried fern rhizomes taken from peat; as drainage these are better than the broken crocks. Fill up firmly to the base of the plant with equal parts of fibrous peat and sphagnum moss, adding a little coarse silver sand to the compost while potting. A moist and shaded corner of the hottest house should be

selected for the plant, where, under the influence of heat and moisture it will grow freely. Throughout the growing season the roots should be freely watered, but while in bloom, and when at rest, less moisture is needed. It will be necessary to keep a sharp look-out for thrips and other insect pests, for when once established in the centre of the young growths it is very difficult to dislodge them. The most effectual way is to puff a little tobacco powder into the growths from time to time whether insects are seen or not, and to vaporize the house with the well-known XL compound.

EULOPHIELLA PEETERSIANA, the second species, is a very interesting plant. It was discovered in 1896 by M. Mocoris upon the Isle of Nattes at the south of Saint Marie, Madagascar, and was sent by him to M. Peeters of Saint Gilles, near Brussels, in whose honour it has been named. Strange to say, for many years previously plant collectors had visited those regions without noticing what now proves to be a common plant there. It is recorded in *The Orchid Review*, that a gentleman well known in the Orchid world thought of sending a collector to explore the Isle of Nattes, and before finally arranging matters it occurred to him to look through some of the dried specimens at the *Jardin des Plantes*, Paris, where he found a well-preserved *Eulophiella Peetersiana* which had lain unnoticed in the herbarium for quite fifty years. In Europe the first plant to flower under cultivation was in Sir Trevor Lawrence's collection at Burford, Dorking, in 1898. The grand inflorescence was unanimously

awarded a first class certificate by the Orchid Committee of the Royal Horticultural Society. The stem of the plant curves and twines like a snake among the branches of trees, its many roots creeping over and under their bark. The large and broad green leaves are from $2\frac{1}{2}$ to 3 feet in length. The flowers are in racemes of about twenty and are carried upon a spike of more than a yard long. Each flower measures about $3\frac{1}{2}$ inches across, the sepals being a fine rosy purple with a deep purple blotch at the tip; the petals are purple and *not blotched*. The lip is white with a broad purple outer border and the throat is white streaked with orange-yellow. When dealing with imported plants the freshly-arrived pieces should be placed

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in crocks but without moss on their surface; and, owing to the rambling habit of the plant, shallow pans are better than either pots or baskets but should be large enough to allow the roots to spread freely. When the plant begins to grow it should be re-potted in the same kind of compost as that advised for *E. Elizabethæ*. There is no need to raise the plant above the rim of the pan, but lay it upon the compost with the base of the young growth just touching the soil. For the first few weeks after potting, keep the surface of the compost just moist by sprinkling it with tepid rainwater, but allow no water to fall upon the plant. As soon as the new roots are seen pushing through the compost, prick in a few heads of living moss over the surface, and gradually increase the water supply. Place the plant in a moist corner of the East India

house or plant stove, where it can be shaded from the sun at all times. During the winter months the plant should be removed to a dry corner of the house, but it must still be kept well watered at the root. Cockroaches are very fond of the roots of this species and they must be sought at night and destroyed by beetle poisons; woodlice are also troublesome and should be trapped by pieces of raw carrot or potato.

EULOPHIELLA HAMELINII.—Of this rare plant little is known, and though several pieces were brought to Europe by M. Hamelin in 1900 none of them lived. From a life-size painting of the flowers shown by its finder, the plant appears to be distinct and beautiful, though I cannot now recall the details of structure and colour sufficiently to give a correct description. Like the other kinds, it is from Madagascar, and though first attempts have failed to establish it I trust we may yet see this rare plant added to the two fine kinds now successfully grown in Europe.

W. H. WHITE.

Burford Lodge, Dorking.

STORIES IN THE GARDEN.—A garden is a beautiful book, writ by the finger of God; every flower and every leaf is a letter. You have only to learn them—and he is a poor dunce that cannot, if he will, do that—to learn them and join them, and then to go on reading, and you will find yourself carried away from the earth to the skies by the beautiful story you are going through. You do not know what beautiful thoughts—for they are nothing short—grow out of the ground, and seem to talk to a man. And then there are some flowers, they always seem to me like over-dutiful children: tend them ever so little, and they come up and flourish, and show, as I may say, their bright and happy faces to you.—DOUGLAS JERROLD.

LÆLIO-CATTLEYA × IMPERATRICE DE RUSSIE (*Cattleya Mendelii* × *Lælia Digbyana*).*

THIS beautiful plant was first exhibited before the Orchid Committee of the Royal Horticultural Society in 1899, and was awarded a first-class certificate. It was raised by Monsieur Maron, in France, and flowered with him just ten years later than Veitch's *Lælio-Cattleya* × *Digbyano-Mossiae*, the first of the *Lælia-Digbyana* hybrids. Both of these fine plants were honoured by first-class awards on their appearance, and although upwards of twenty *Lælia Digbyano* crosses have since flowered in Europe, these two kinds are still among the best of their class. The subject of our plate has large white blossoms which are heavily and exquisitely fringed, the whole of the flower delicately tinged with a suffusion of rose-pink, and though this colouring is typical, varieties differ slightly, and there are now many varieties, such as those of Hessle, Tring Park, Veitch's, and others. A complete list of the hybrids of *Lælia Digbyana* is given at the end of these notes, from which it will be seen that there are none in which *L. Digbyana* has been the seed-bearer. We believe that some of our best growers are now tending seedlings that have this plant as a mother, but up to the present no hybrid has flowered in which it was certain that this Honduras *Lælia* bore the seed. Yet in its native home amid the damp shady forests it must seed freely, for the writer has gathered from imported plants well developed capsules that had evidently contained good seed.

There is an unusual distance between the stigma and the ovary in this Orchid; in fact, the long tube or beak forming the upper part of the capsule is three times the length of that containing the seed, hence there is probably an exhaustive effect on the pollen while passing down this long tube, making a large quantity necessary to perfect fertilization. Another unusual feature is that the stigma contains three distinct cavities. Growers are anxiously waiting to see a hybrid from the seed of *Lælia Digbyana*, for it seems certain that so remarkable a plant will convey to its offspring characters very different from those of the more remote pollen-influence. So far as my experience goes, the seed-bearer in plants and the female in animals usually exercise the strongest influence upon offspring, the mother's own traits of character and degrees of beauty and development being reproduced in a way that is far more marked than those of the male parent. According to this rule we may look for great things from these unflowered crosses.

Culture.

This fine Orchid thrives in the Cattleya house, potted either in Belgian leaf-mould, polypodium fibre, or a mixture of peat and moss. It is not difficult to grow, and needs a thorough rest when growth is completed. While growing it revels in heat and moisture, pure fresh air, and plenty of soft water. The male parent (*Lælia Digbyana*) makes its growth in our winter, flowering in early spring upon the nearly completed young growths. The female parent (*Cattleya*

* From a drawing by H. G. Moon at "The Woodlands" (R. H. Measures, Esq.), Streatham.



LÆLIO-CATTLEYA - EMPRESS OF RUSSIA

Mendelii) makes its growth during late summer and autumn, resting until spring, and flowering in early summer. These crosses flower upon their nearly finished pseudo-bulbs, tending in this respect more to the pollen parent than to *Cattleya Mendelii*.

The Lælio-Cattleyas are best grown in pots or pans, and this plant is best potted when the new growth is from 4 to 6 inches high, which is generally in the autumn; even when as late as October, before making its new growth, it is best to repot at once in fresh soil, which rarely fails to draw new roots.

JOSEPH GODSEFF, St. Albans.

PATAGONIAN VEGETATION.—The vegetation of Fuegia is most curious, its chief characteristic being the immense jungle of scrub and brush. The trees are not large nor close to one another, and so there is no appearance of forest. Beeches are common, but are stunted, owing to the vast *débris* of old vegetation. Among the creeping plants grow large bunches of Mistletoe right up the trunks of the trees. The islands at the west end of the Straits of Magellan are exceedingly rich in plants, consisting mainly of brush; in the east the land is low and covered with Grasses and low herbage, the trees being less tall. The general features of the vegetation is like that of the southern parts of Norway and Sweden. The temperature only changes by a few degrees, and vegetables from other lands will not seed, owing to the slight summer heat.

LÆLIA DIGBYANA HYBRIDS.

POLLEN PARENT.	SEED PARENT.	PRODUCT.
<i>Lælia Digbyana</i> -	Cattleya Gaskelliana - -	Lælio Cattleya Thorntoni.
	" Mendelii - -	" " Imperatrice de Russie.
	" " - -	" " Digbyano Mendelii.
	" " - -	" " " " var. Tring Park.
	" Mossiæ - -	" " Digbyana Mossiæ.
	" Trianæ - -	" " " Trianæ.
	" Dowiana, var. aurea - -	" " Mrs. J. Leemann.
	" labiata - -	" " Mdm. Margaret Fournier.
	" " - -	" " " " var. W. H. Young.
	" Loddigesii, var. Harrisoniæ	" " Groganiæ.
	" quadricolor - -	" " Mrs. Chamberlain.
	" Warneri - -	" " Marie.
	" Warscewiczii - -	" " Mdm. Chas. Maron.
	" Leopoldi - -	" " conspicua.
	" gigas - -	" " gigas-digbyana.
	" Eldorado - -	" " Pocahontas.
	Lælia cinnabarina - -	Lælia Mrs. M. Gratrix.
	" purpurata - -	" Digbyano purpurata.
	" " - -	" " " var. Veitchii.
	" " - -	" " " var. Mikado.
	" " - -	" " " Edward VII.
	" tenebrosa - -	" " Helen.
	" crispa - -	" " Rolfei.
	Lælio Cattleya Aphrodite - -	Lælio Cattleya Edgar Wigan.
	" " elegans - -	" " Mackayi.

THE GREATER TREES OF THE NORTHERN FOREST.—No. 18.

THE FIELD ELM (*Ulmus campestris*).

THE Field Elm is the most stately tree in the plains and valleys of Britain and western Europe, and one of the most popular too, owing to its easy increase and rapid growth, but one that in our country should never be planted, as it commonly is, in avenues, beside roads, or near houses and out-buildings. In such places it is much better to have firmly-rooted trees like the Ash, Beech, and Pine, that can be depended upon in storms. With the Elm there is always the danger, even in fine weather, of boughs falling with fatal consequences to men or animals, and there is the disaster which results from heavy rain-storms and floods sweeping over the country, desolating whole valleys, and as a consequence so glutting the market with the trees blown down that their numbers often prevent any fair prices being realised. Two or three years ago when driving through the beautiful country of West Sussex I came to the village of Stoke, near Chichester; there was a scene of tree ruin, nearly all the lordly Elms near the village thrown down and banks and roads torn up. Such scenes are only too common in our rich valleys after storms, and therefore it is not advisable to plant this tree close to any human habitation or beside roads and pathways. Of its value there can be no question, but the right place for the Elm is the heart of the wood, or in alluvial or free soils and loams, where one gets the best results, and it is quite out of harm's way. As a forest tree we should get its strength

expressed in a bolder way than when isolated as it so often is, and it is also out of danger in groups in parks like Spetchley.

Wood.

Though often low in price owing to the frequent falls of trees during storms, the wood of the Field Elm has good and varied uses, and may be and is often employed for purposes which generally the Oak is thought best for, as, for example, flooring and weather-boarding. It is better in quality than that of the Mountain Elm. It is hard, elastic, extremely tenacious, not liable to crack, and as lasting as Oak. It is specially useful in damp places like cellars, mines, &c. By wheelwrights it is used for the felloes of wheels, and in time of war well-seasoned Elm wood commands a high price, being much in use for gun carriages. The heart wood is abundant and is composed of many layers, though fewer in number as the vegetation is the more active. It yields four times as much ash as the Beech and contains twice the amount of potash, and the same remark applies to the leaves. Next to the Lime the inner bark of the Elm is the most fibrous and the most tenacious and lasting, which makes it most suitable for matting and rope-making. Before the taste for cast-iron and earthenware arose the wood was used extensively in London for pipes for conveying water to the houses, and it is a common thing when making changes in old streets for Elm wood pipes to be dug up, little the worse for having been so long underground.

The Elm is a native of central and

western Europe and parts of North Africa and Asia; it is supposed not to have been originally a native of this country, though from its extensive growth in our islands it must have been of very early introduction, probably by the Romans.

Increase. The Elm is one of the most prolific of trees, scattering its seed freely, and therefore it is important in all cases of forest plantation to see that the trees come from seed, as the Elm suckers very freely, and there is the danger of getting suckers instead of seedlings. For this purpose good seedling trees of 3 to 4 feet high should be used. The rotation maturity of the Elm as a forest tree is from 80 to 100 years, at which age it will have attained the dimensions that fit it for most usages. There is no merit and no profit in letting it get broken-backed and rotten to the heart as we see it about London. Selby protests against the practice of grafting the Field Elm on the Mountain Elm, an absurd practice, as in all soils it likes, the tree does much better from seed.

Varieties. There are a number of these, mostly of garden value, and that doubtful, though they bear attractive names: Golden, Silvery, Marbled, and Variegated; but none of them are worth growing except from a shrubbery point of view. They are usually grafted, and sometimes in

country places one may see them making a fair growth. Of greater value are the natural varieties of Field Elm, such as the Red Elm and the Cornish Elm; but we may safely take the common Field Elm as the best from our forest point of view. Books have been over-



GREAT ELM IN HATFIELD PARK.

burdened with names of its varieties, and it does no good, because for so many one Latin name is as good as another, so worthless forms come to be planted instead of good ones.

REFERENCES.—Cobbett, *Woodlands*, par. 227; Loudon, *Arboretum*, vol. 3, p. 1371; Laslett, *Timber and Timber Trees*, p. 153; Evelyn, *Sylva*, 2nd edition, p. 28; Matthew,

Naval Timber and Arboriculture, p. 54; Mathieu, Flore Forestière, p. 297, 4th edition; Selby, History of British Forest Trees, p. 104; Lecoq, Géographie Botanique de L'Europe, vol. 8, p. 325.

It is *Ulmus campestris*, Linnæus; *sativa*, Miller; *hollandica*, Miller; *suberosa*, Moench; *tetranda*, Schkuhr; *germanica*, Hartig; *alba*, Waldstein and Kitaibel; *rugosa*, Loddiges; *vulgaris*, Dumortier; *carpinifolia*, Lindley.

* * *

THE EULALIAS (*Miscanthus*).

THEIR very name—meaning “highly spoken of”—expresses the merit of this elegant group of grasses, hardy as garden plants over the greater part of Britain even if their spreading plumes are only seen in good years. From August far into the autumn their fine foliage is a striking feature in gardens of light soil, and when, during seasons such as the present, their curving feathers are freely produced, the effect is beautiful and different from that of any other plant. Their height and character vary much according to conditions, from as much as 8 or 9 feet to about a yard high, but similar differences of development are seen all over their wide area, from low tufts of a few feet on the hillsides of Japan and China, to tall reed-like growths in India and the islands of the southern seas, one form found at Hong Kong bearing plummy heads measuring 18 inches by 12. Their usual height with us is from 4 to 6 feet of long erect stem, bearing broad arching leaves of 2 to 3 feet, which are pale green, or blotched and striped with white and yellow in the variegated forms. Being far hardier than the Pampas Grass (*Gynerium*) they may be grown either in the open or in pots and tubs under glass for conservatory and house decoration, and in cold districts it is well to have a few plants inside during winter in case of loss. In most

gardens, however, they will (with a little protection) pass an ordinary winter unharmed, but in cold or low parts a place upon sunny slopes and light soil is best for them, not only during winter but as more likely to induce flower and (with the striped kinds) fine foliage. If grown in rich soil, whether as border or pot plants, the variegated sorts often become green or only develop their colour late in the season; they are also less hardy than the green kind. This last is easily raised from seed and seedlings are the best for grace and vigour in the garden; the varieties, not coming true from seed, are increased by division and spread so fast that a stock is soon formed. Young plants are best for indoor use and should be grown cool, becoming drawn and bare at the base in heat. But where conditions are favourable the Eulalias are far more satisfactory in the border than under glass, and rapidly grow into spreading tufts measuring many feet. In fine seasons the flower-spikes appear from the end of August as purplish plumes of 8 to 12 inches, spreading fan-wise and spangled prettily with golden anthers; on maturing, the plumes expand to a mass of silvery grey fluff upon arching sprays suggestive of the Prince of Wales' feathers, forming a pretty ornament when dried. If for this use the plumes are best cut before fully open and dried slowly in shade or shaken out before a brisk fire. Though sometimes flowering well even in the north their plumes are rarely seen in many gardens from the fact that in our country the stems often only flower in their second season while in general the plants are cut to the

ground by frost during winter. As fine foliage, however, few plants are more useful, and the broad and narrow leaves, striped or barred with white and gold in some kinds, offer a variety of form as beautiful as it is uncommon. Of late years the botanical name of the group has been changed from *Eulalia* to *Miscanthus*, but the old and well-known name should be retained by gardeners.

KINDS:—THE COMMON EULALIA (*Miscanthus japonicus*).—A vigorous plant, hardier and more robust than its variegated varieties, with tall stems hung with arching deep green leaves marked with a stout white midrib. The purplish plumes appear rather late in the season but are of fine effect when borne freely upon old plants.

STRIPED EULALIA (*M. japonicus variegatus*).—A variety of the first, of smaller growth and not quite so hardy, but of fine effect for small gardens and conservatories. When well grown the stems reach 5 to 6 feet, the broad leaves striped with creamy white bands which in hot seasons, or towards the autumn, often assume a rosy or purplish tinge. The plumes, coming in September, are not showy until well expanded. Soil light and not rich, or mixed with stones in damp gardens.

ZEBRA GRASS (*M. japonicus zebrina*).—A handsome variety, reaching Europe by way of America, hardy, vigorous, and unlike any other grass. The stems run up many feet, bearing leaves crossed by broad blotches of yellow. In old plants (especially in rich soil) these markings often become faint or appear late in the season; division and stony soil is the best remedy. Flowers as in other kinds. This is more robust than the other striped kind, being

hardy over a large part of Britain and Ireland. A sub-variety *zebrina stricta*, is distinct in habit, the leaves remaining nearly erect instead of drooping.

FINE LEAVED STRIPED EULALIA (*M. sinensis*).—A narrow-leaved Japanese species of free but smaller growth, rarely rising above 4 feet



VARIEGATED EULALIA IN FLOWER.

and seldom known to flower. The arching leaves, only $\frac{1}{4}$ inch wide, are long and droop gracefully towards the tip; green with a broad central stripe of white. Young plants grown in pots are pretty for the table, while grouped in the border or upon a lawn it is one of the most beautiful of grasses. Increased by division in spring or early autumn.

There are a few other kinds making in all some five or six species found in southern and eastern Asia, but not having yet been introduced they may be dealt with briefly. *Miscanthus saccharifer* (syn. *sacchariflorus*) from China, its smooth plumes being sometimes offered by Japanese merchants. Though found at Kew it is almost unknown in gardens spite of its vigour and beauty. It forms stout bamboo-like stems of 8 or 10 feet, woody in texture, with deep violet knots and base. The leaves are $1\frac{1}{2}$ inches broad and 3 feet long, smooth at the edge, gracefully arching, with a bold white rib down the centre. Grown as at Kew, this kind would form a conspicuous ornament in gardens. The Himalayan Fairy Grass (*M. Nepalensis*), from northern India, is rarely seen in gardens, with smooth edged leaves and flowers in a dense single head and not divided like others of the group. Other kinds are *Ms. cotulifer* and *purpurascens*, both of Japan.

PENTSTEMON.

AMONGST free-flowered border plants few are more brilliant than the large group of Pentstemon, an American family of about 100 kinds, scattered widely over Canada and the western United States, with a few stragglers amid the mountains of Mexico and one kind in north-eastern Asia. All are perennials though some of them bloom in their first year from seed and not a few spring from a hard shrubby base. Their variety of habit and colour, as also in size and form of flower, render them one of the most graceful and interesting of plant families. Our damp English winters are against these sun-loving little strangers though none the less the hardier kinds will often pass the winter in southern gardens of light soil when protected from frost; with the shelter of a cold frame nearly all the kinds may be kept safely. Those commonly grown are a race of hybrids known as *Pentstemon gloxiniioides*, of uncertain

origin, but believed to be crosses from species such as *P. Hartwegi*, *Cobaea*, and a few others, the seedlings being further improved by selection. Though less common in gardens the variety of wild kinds offers a rich choice for the rock-garden and border, most of them being easily grown and increased, though many kinds do not vary from seed. A great many kinds were introduced early in the last century and grown at Chiswick, and though some of these have disappeared a large number are still grown at Kew and in many trade collections.

Culture. Little need be said as to their need of good soil

and abundant moisture. When grown as rock-plants it must be remembered that they need richer treatment than *alpines*, with constant moisture at the root (often best secured by stones) though enjoying full sunlight. Many kinds are gems for the rock-garden, maintaining in good years a succession of flower from June well into October. Where the soil is very light it should be enriched with cow manure and the roots protected from frost with cocoa-fibre or ashes. Young plants are best raised from cuttings taken after flowering and slowly rooted in a cool frame of light sandy soil, air being given freely throughout the winter when possible. It is best not to plant out too soon in spring, nothing being gained by early exposure of plants whose first value is for their autumn display.

KINDS:—*Pentstemon acuminatus*.—A pretty plant growing rigidly erect to 12 or 18 inches, with thick greyish leaves clasping the stem and a compact spike of mauve or violet flowers, wide at the throat and nearly an inch long.

P. antirrhinoides.—A plant of wiry growth,

freely branched and varying much in height. Leaves small, oval or nearly so, and broad flowers in clusters of three, clear yellow, and fragrant. California. Tender in this country save in very warm light soils.

P. azureus.—A beautiful plant of 1 to 2 feet, forming a neat tuft of narrow grey leaves and loose spikes of azure-blue flowers shading to reddish-purple at the base. N. California.

P. azureus var. *Jaffrayanus*.—One of the best dwarf kinds, about a foot high, with reddish stems bearing large flowers of rich blue in showy clusters of three to five blossoms.

P. barbatus.—A taller erect plant, very showy in a dry season and one of the best and hardiest of border kinds. Its spikes of narrow tubular flowers, varying from light pink to bright carmine, rise from a dense spreading tuft of bright green leaves. Fine in masses. Seed, cuttings, or division. A flesh-coloured form is known as *carneum*. Syn. *Chelone barbata*.

P. barbatus var. *Torreyi*.—A pretty form with deep scarlet flowers, longer in the lip and coming rather later than in the parent.

P. barbatus var. *antwerpensis*.—A plant of looser procumbent habit, the stems rooting where they touch the ground; small flowers of vivid scarlet.

P. breviflorus.—A distinct plant with short tubular flowers of yellow or light red, with darker red lines within, appearing late in autumn upon slender many-flowered stems.

P. Bridgesii.—A scarce Californian plant of 12 to 18 inches, with narrow grey leaves and spikes of bright red flowers, rather like those of *P. barbatus* but shorter in the tube. Minor botanical differences have caused some authors to place it in a sub-gender, *Saccanthera*.

P. caeruleus.—A dwarf kind rarely exceeding 9 inches, with large flowers varying from light blue to lilac and white, or more rarely flushed with rose.

P. campanulatus.—A Mexican species of about 2 feet with diffuse spreading habit, branching freely from a woody base; stemless leaves narrowing from a broad base and much toothed. Long narrow spikes of flowers variously shaded in pink and violet, and borne during a long season. Comes freely from seed. A distinct form, *albus*, bears long tubular flowers of creamy-white. A plant of many names: *angustifolius*, *atropurpureus*, *pulchellus*, &c.

P. centranthifolius.—A slender leafy kind with thick grey leaves and narrow scarlet flowers appearing in June. California and Arizona.

P. Clevelandi.—A Californian species akin to *barbatus*, with grey stems and foliage springing from a woody base; flower-spikes long and slender, with narrow tubular flowers of bright crimson, thickly set. Leaves sharply toothed. A good border kind.

P. Cobæa.—A handsome kind from Texas and a parent of the garden varieties. Stout erect growths of 2 feet, with thick deep green leaves, minutely hairy and a little sticky. Flowers very large and open, narrowing rapidly to the base; colour varying from reddish-purple to nearly white. August. A rather tender kind,



PENTSTEMON COBÆA.

doing best in a warm season. A fine variety *purpurea* bears very large purple flowers shaded with violet, one of the best forms that can be grown.

P. confertus.—A distinct plant with short erect stems rising from a carpet of dark green shining leaves, at times finely toothed. Small flowers of pale yellow or creamy white in dense crowded spikes.

P. confertus var. *cæruleo-purpureus*.—A good garden form with compact heads of deep violet blue.

P. cordifolius.—A useful shrubby plant or

semi-climbing habit, flowering from early summer to late autumn. Its growths are leafy, the long slender stems loaded with tubular scarlet flowers about an inch long. S. California. Being tender, this handsome kind needs shelter in winter.

P. cristatus.—A good plant of but a few inches with a tuft of narrow hairy leaves often sticky with gum, and short spikes of reddish-purple flowers about an inch long, and of curious shape from abrupt inflation of the tube.

P. cyananthus.—A variety of *P. glaber*.

P. deustus.—An effective kind for grouping amongst rocks, being of neat dwarf habit with short stems rising from a woody base. Leaves thick, shining, and variable in shape, mostly dented, and the upper ones stemless. Wide-mouthed flowers of yellowish-white, sometimes tinged with purple, and arranged in a crowded cluster on the spike. July. Western States.

P. diffusus.—A species abundant near the Columbia River, and one of the best in flower from June until cut by frost. Stems of about 2 feet, of spreading habit, the broad leaves deeply toothed; light rose-purple flowers of less than an inch, upon short stalks, and carried upon leafy much-branched stems. A showy little plant, early in flower, seeding freely, and well worth cultivation.

P. Digitalis.—A variety of *P. lævigatus*.

P. Douglasi.—A variety of *P. Menziesi*.

P. Eatonii.—A plant of recent introduction, and one of the best of the group, growing about 2 feet, with flowers of rich crimson-scarlet widening towards the mouth. California.

P. gentianoides.—A large-flowered Mexican species with long shining leaves upon stems of 3 to 4 feet, and spikes of violet flowers in July. Tender in all save the most sheltered positions.

P. glaber.—A handsome plant, and one of the best for all purposes, with several fine seedling forms. Dwarf erect growths, often less than a foot high and slender in habit, with long narrow leaves, smooth and wavy. Profuse in fleshy flowers of an inch or more, wide at the mouth and borne in clusters of six or seven; colour, bright blue shading to violet or purple. Banks of the Spokane River in N.W. America. Among its many good forms are *alpinus*, a dwarf

robust kind with dense clusters of clear azure blue; *cyananthus*, a wild form of the Rocky Mountains with taller and greener stems, broader in leaf, with dense clusters of blue; *hybridus*, of stouter and more vigorous growth (at times nearly 2 feet) with large heads of blue and rosy-purple; *speciosus*, a narrow-leaved form with beautiful bright blue flowers shaded purple; and *splendens*, a tall plant with flowers of rich dark blue. Seed should be sown early in spring. Syn. *P. speciosus* and *erianthera*.

P. glandulosus.—A showy plant from the sandy channels of torrents in the Rocky Mountains. Thin toothed leaves upon stout erect stems of 2 to 3 feet; flower-spikes narrow with large rosy or lilac flowers, wide in the throat and short in the lip. June. Syn. *staticifolius*.

P. glaucus.—A pretty dwarf species from the Rocky Mountains, with grey stems and foliage of about 9 inches; dense clusters of dull lilac or bluish-purple flowers of medium size, with a wide pale throat. A form of this known as *stenosepalus* has shorter, denser spikes, and a different formation of the sepals.

P. gloxiniioides.—The race of named garden varieties so widely grown as border plants for autumn effect.

P. gracilentus.—A shrubby kind of about a foot, with a woody base, long shining leaves, and loose clusters of tiny violet-blue flowers very shortly lobed.

P. gracilis.—A slender plant of dwarf growth with long funnel-shaped flowers of lavender colour, varying to white; upper leaves long and narrow, base leaves more rounded. August. A neat and pretty plant for the rock garden.

P. grandiflorus.—A tall grower, making stout stems of about 3 feet with thick, broad leaves of bluish-grey, clasping or surrounding the stem. Brilliant flowers of 2 inches or more of a fine blue or purple, with a wide base and very short stalks.

P. Hallii.—A low herb from the mountains of Colorado, with thick, narrow leaves, and broad, bell-shaped flowers of pale mauve or purple, in short spikes.

P. Hartwegii.—A very old kind found by Humboldt upon the mountains of Toluco, Mexico, near the snow-line at a height of 11,000 feet. It is a plant of great vigour and beauty, and for awhile was much grown, but

has given place to seedling forms in which its influence is very marked. Its purple stems, freely branched, exceed 3 feet, with long shining leaves of bright green and drooping flowers of scarlet or deep purplish-crimson. Has been much modified by cultivation.

P. heterophyllus.—A lovely little sub-shrub amongst the best of dwarf kinds, with neat growths of 12 to 15 inches, narrow leaves of grey-green, and slender branching stems of clear, bright blue flowers, with a rosy flush deepening to purple, and often much varied upon the same plant. July. Thrives best in warm sheltered spots and light soil. Cuttings root freely. California.

P. humilis.—A dwarf plant of 6 to 8 inches, from open slopes of the Rocky Mountains, and as a result very hardy in bleak exposures. It is akin to *P. gracilis*, but with flowers of a deeper blue and denser in the spike. They are small and narrow, ranging from deep purplish-blue to nearly white, and freely produced. A gem for the rock garden.

P. Jaffrayanus.—A variety of *P. azureus*.

P. labrosus.—From the hills of Southern California, with long narrow leaves upon tall purplish stems of 3 to 4 feet, and long loose spikes of narrow, tubular flowers, bright scarlet, and held nearly erect upon first opening.

P. latus.—A shrubby Californian species with grey down-covered growths a foot high, and blue flowers of about an inch during July and August. A pretty kind, but rare in gardens and somewhat tender.

P. lævigatus.—A tall plant with leafy stems and long slender flowers, white or tinged with purple, widening from a narrow base. It is a common plant in the western States, its best form being the Foxglove Pentstemon (*lævigatus Digitalis*) growing 4 or 5 feet with larger and more inflated white flowers.

P. Lemmoni.—A tall slender shrub from California, with shining bright green leaves and loose spikes of small yellowish-red flowers.

P. Lewisii.—An old name for *P. Menziesii*.

P. Menziesii.—An old shrubby kind found by Douglas in the Rocky Mountains early in the last century, and introduced in several forms with different names. It is a good rock-plant for a warm sunny corner in dry sandy soil, with a free spreading habit, but tender

in our moist winters. Stems of less than 12 inches, with pretty rose-purple flowers of brilliant tone. Increased by cuttings in sandy soil. Its several forms are:—*Douglasii*, with small thick leaves and lilac or rosy-purple flowers; *Newberryi*, forming a graceful bush with pink or rosy-purple flowers (syn. *P. Robinsoni*); and *Scouleri*, a taller and earlier flowering form, of trailing habit, rooting at the joints, and less tender than other forms, its flowers of bluish-lilac or violet-purple. Oregon.

P. Murrayanus.—A very handsome and distinct plant with flowers of deep scarlet about 1½ inches long, upon long slender stems of 2 to 3 feet. The lower leaves of smooth grey-green clasp the stem; the higher ones grow together at the base into cup-shaped form as they ascend the stem. Texas. Best grown as a tender biennial, though perennial in its wild state. A fine race of seedlings has been raised from this plant by Messrs. Vilmorin under the name of *Murrayanus grandiflorus*; their flowers are larger, richly varied as to colour, with a long season of beauty.

P. Newberryi.—A variety of *P. Menziesii*.

P. ovatus.—A rare and pretty mountain plant from the limestone summits of Idaho, with slender erect stems of 3 feet, bearing bright green leaves and loose spikes of blue flowers changing to rosy-purple. It is best grown from seed at frequent intervals, old plants becoming exhausted.

P. Palmeri.—A handsome plant, though of slow growth and somewhat tender. Stems of 2 to 3 feet with thick grey leaves growing together around the stem, and pale flowers flushed with pink or purple and very wide at the mouth. Utah. Best reared in pots and only planted out to flower in its second season.

P. pubescens.—The wild kind of eastern America, common as a loose-growing slender herb of 2 feet, with toothed and sticky leaves and loose clusters of deep purple or flesh-coloured flowers, enlarged at the mouth, but closing like the flowers of a Snapdragon. From Ontario, south and west. Syn. *P. Mackayanus*.

P. puniceus.—A beautiful and showy plant, flowering freely in the dull time between summer and autumn. Stout erect stems of 1 to 6 feet, with stemless leaves of grey-green, blunt and fleshy, and funnel-shaped flowers of glowing crimson in clusters of three and four, their

rich colour set off by clear white anthers. Arizona and Mexico. A plant with all the good points of *P. Murrayanus* and much easier to grow, flowering finely during the present warm summer; to be seen with effect should be freely grouped and the stems carefully staked. It is nearest to *P. Eatoni*, but differs from it in its taller growth, its greyer leaves, and its flowers of deeper crimson. Seeds.

P. Richardsoni.—An old plant found about the Columbia River and its branches, thriving in the leafy deposits drifted amongst the rocks. It is a showy kind, forming long rambling stems of 3 feet, loosely branching, covered with shining deeply cut leaves and medium-sized violet or rosy-purple flowers. A robust plant forming large tufts.

P. Roexli.—A dwarf plant akin to *P. latus*, with narrow leaves and flowers of pale blue or lilac.

P. rotundifolius.—A good border plant growing 2 feet high, with thick rounded stems and leaves of grey-green and large drooping flowers of bright brick-red upon long stalklets, giving the spike a loose appearance. A handsome plant from N. Mexico.

P. secundiflorus.—A handsome and distinct border plant of free growth, with narrow grey-green leaves and bluish flowers suffused with bronze where touched by sunlight. They are an inch or more long, very broad and bell-shaped towards the mouth, and carried in long narrow racemes. Colorado. A good plant of recent introduction, still rare in gardens.

P. spectabilis.—An old and useful Mexican species of 18 to 24 inches, with greyish-green leaves deeply toothed, and pretty rosy-purple flowers of about an inch, very open and full in the purple-lined throat, and carried in branching panicles.

P. Torreyi.—A variety of *P. barbatus*.

P. triphyllus.—An old kind found by Douglas many years ago upon the decomposed granite soils of the Blue Mountains. Growing about 18 inches high, it bears small violet or pale rose flowers in a loose leafy spike, the pale inner throat of the flowers lined with darker veins. A slender herb thriving in sandy soils.

P. tubiflorus.—A plant throwing tall stems of 2 to 3 feet from low leafy tufts, the stems bare save for a few small bracts and the dense

spike of tubular white flowers, sometimes shaded with purple, and arranged in successive tiers. Kansas and Arkansas. A distinct and showy plant with a long season of beauty.

P. venustus.—An old and pretty border plant from the western States, with erect leafy stems of 2 feet and thick leaves sharply indented. The spike is narrow, bearing fine purple flowers more than an inch long, widening from a narrow tube, and hairy within.

P. Watsoni.—A hardy little plant of recent introduction from the mountains of Colorado, dwarf and much branched, bearing rounded leaves and small funnel-shaped flowers of dark violet-purple, relieved at times by touches of white.

P. Wrightii.—A handsome and showy kind, coming very near *P. puniceus*, but less tall, and smaller in leaf and flower. The flowers are also of a deeper crimson, less than an inch long, borne freely upon stout purplish stems. Leaves less fleshy, but of the same grey-green, oblong below, and merging to surround the stem as they ascend. A plant of fine colour when grouped, particularly in seasons such as the present. B.

THE STONE PINE (*Pinus Pinea*).

THOUGH some may dispute its claim to the proud title "Pine of Pines," none can deny that this tree is one of the most beautiful of Europe. Sung by classic poets and immortalised in later years by the genius of Turner and other landscape painters, its praise has become familiar in all lands; while travellers in southern Europe are perhaps more pleasantly impressed by its beauty than by that of any other tree. The Eastern Cypress is impressive but is sad withal, haunting the cemeteries or ranged in ranks too straitened for natural charm. The Olive, beautiful as it is, has beauty too visibly constrained and fettered; beauty that is chained in ranks, terrace by terrace and tier above tier; beauty that is trained and trimmed, dug-about, controlled, and forsaken when days of profit are over. The beauty of the Stone Pine is the wild free beauty of Nature, whether of the shady forest, of wind-swept crag, or sunlit shore. Standing alone, it spreads a dome of faultless symmetry, finer than any temple fane, the great head gracefully poised upon the trunk of mottled grey and brown; or again, grouped in



STONE PINE AT CASTEL GANDOLFO, ITALY.

picturesque disorder, with the Cluster Pine (*P. Pinaster*) serving for foil and background, it seems an essential feature in the southern landscape, gracing with equal charm the classic ruins of Rome's lost empire or Nature's fretted fragments around her shores. Oftenest, and best, the tree is found in scattered groups about the villages skirting the coast, always a thing of beauty and valued by the peasant for their seed,—used to enrich his soup or the homely cakes prepared for festal days—while the empty cones kindle his fire and warm his heart with their crackle and fragrance. Throughout the summer's glare he welcomes its shade, while the cygale hidden within its creviced bark rings out the live-long day its chirping cry, varied only by the sudden rending of the ripening cones. More rarely the trees are massed until their spreading branches touch in unbroken canopy, but this is oftenest where it creeps down to the sandy shores that bound the tossing blue, its stout limbs careless of the breeze until the roots dip in the brine itself. Such a forest was once the glory of the town of Cannes, skirting the plain of Laval from St. Cassien to La Bocca; but the railway cut it through and only scattered groups recall the beauties past. Similar and larger forests known as the "Pineta,"—their glories sung by generations of poets, extend for miles upon the sandy salt-washed tracts of the Adriatic, about Ravenna—"Queen of the Marshes," where immense quantities of fruit are gathered yearly. The neighbourhood of Rome is noted for its groups of Stone Pine, while many of the finest individual trees exist within that "little land apart," lying between Toulon and San Raphael, amid the sheltered gorges of the Mountains of the Moors.

Range. Valued and cultivated from the earliest times for its sweet nut-like seeds—charred remains and rude drawings of them having been dug up in Pompeii and Herculaneum—the Stone Pine is spread over a wide area in Europe and Asia, though Italy would seem to be the centre of its distribution, and here alone it reaches the lofty and majestic form which singles it out as "the Italian Pine." From scattered groups amid the hills of southern France and above Genoa, it increases to forests around Florence, growing freely from the foot of the Alps to Sicily upon every sunny

hill and sandy sea-board, rarely rising above 1,500 feet, while 3,000 feet in the south is its extreme of altitude. From Italy it passes the Adriatic to the western shores of Greece and its archipelago, and thence more sparingly through Croatia and Syria into Asia, where its range is unknown, though the tree is certainly plentiful in parts of China. Westward it is scattered through northern Africa to Madeira and the Canary Islands, is common in parts of Spain and Portugal, forming forests in Catalonia, while northward it is found wild in the Rhone valley and amid the Carpathians. Cultivated trees are hardy in many parts and as far north as Paris where they have frequently resisted severe cold. Introduced into Chili and other parts of America, it thrives freely upon the mild Pacific coast, while in South Africa, particularly around Capetown, it is firmly established and flourishing.

Character. The old trees seen here and there measure at times nearly 100 feet in height, but less than half this is usual, and even in the south many years pass before they reach the size of timber trees. Nor is the wood in demand save for common uses, though clean, free of resin, and easily worked; at one time used for masts and boat-building it is now quite discarded, and the tree valued mainly for its fruits and the balsam extracted from its resin. The nut-like seeds, nearly an inch long, of which there are 90 to 100 in a single cone, are of soft rich flavour, shut within very hard shells, and embedded in the scales of the cone from which they are freed with difficulty. The cones are large, light red in colour, with very thick scales, and take three full years to mature before bursting naturally; immature cones are sometimes roasted and broken open, but the unripe seeds are poor in flavour, and while the nuts will keep for years within the cone they quickly spoil upon exposure. Spite of its more pyramidal habit the Cluster Pine (*Pinus Pinaster*) often passes for *Pinus Pinea* amongst those unfamiliar with the true Stone Pine, whose leaves are shorter, less tufted, and more erect than in the first, of a deeper green also, while the cones are quite unlike.

In Britain. Though perhaps the earliest of foreign Pines to reach our shores, the Stone Pine has remained rare with us and left few traces of age, owing to its slow

growth and its tenderness in the severe winters that recur from time to time. Even in its own country it is not secure from frost, for in the terrible winter of 1879 the great woods near Ravenna were seriously injured and in part destroyed by the severe cold. But neglect, for trees of more rapid growth, has, perhaps, more to do than actual tenderness with its lack of effect, for where fine trees have reached maturity unharmed by frost, they are too often spoiled by the near presence of other and unsuitable neighbours. In its own haunts this tree is rarely found with others save Pines of a like nature, growing in groups apart, perched upon sandy banks, or clustered upon the seashore amid conditions unfavourable to other trees, save such as the Cork Oak and Arbutus. If, therefore, one would secure its true beauty these conditions should be borne in mind. There are sun-bathed and sheltered nooks abounding upon our southern and western shores where, with light soil and genial conditions, we might eventually enjoy something of the fine effect of this Pine of Pines. A deep sandy or gravel soil, shelter while young, and initial years of patience, are the main conditions; the young trees should be raised from seed and wintered under glass until several years of age and of a size to stand in the open.

Existing Trees. That the Stone Pine is not unworthy of trial in favoured spots of our country is shown by the size of trees kindly measured for us within the past few days, and which would appear to be the finest in the country. Two of these are growing at Margam Park, South Wales, the larger reaching 46 feet in height with a spread of over 60 feet and a trunk measuring just upon 8 feet at 4 feet from the soil, and rising clear for 15 feet before branching. Though it has gained in stretch of limb, this tree has lost slightly in height of late years through sinking to one side under the weight of its spreading head; it is in good health and bears many cones. The second tree is nearly as large, being 40 feet high, with a span of 50 feet and equal to its companion in girth. These—with others long since disappeared—are said to have grown from cones brought from Italy nearly a century ago. There is also a large tree in the grounds of Penrhyn Castle in North Wales, growing in

light gravel soil overlying hard rock, 41 feet high, and girthing 5 feet at 3 feet from the ground. This was once a shapely tree with well-formed head, but of late years has been so crowded by other trees as to lose its fine appearance. There are also finely-grown specimens at Glenthorne, North Devon, and in Dublin Botanic Gardens, while Loudon mentions others at Ballyleady in County Down, at Reading, and many other parts of Britain, but of these present details are wanting.

Varieties and Names.

The few so-called varieties are of little moment beside the real tree, the most notable being the "Tarentina Pine" (*Pinea fragilis*), grown in various parts of the south of Europe for its thin-shelled nuts, which are more readily broken than the hard seeds of the common kind—well called the Stone Pine. Other forms vary in size of cone, that with the largest coming from Crete (*Pinea Cretica*), where the tree is said to reach its greatest size. A second insular variety comes from Madeira, differing somewhat in habit, in its much longer leaves, and in minor points of mere botanical interest. The fruiting Pine of the East, known as the "Round-coned Chinese Pine," is identical with this of Europe; other local names are the *cultivated* Pine, the *parasol* Pine, and the *nut-bearing* Pine. B.

GROUPS OF YEW TREES.—Looking out at Broughton Castle, Banbury, on the old group of Yew near the house, with the rising or the setting sun giving an added grace to its naturally fine colour, I was led to think of how seldom this finest native evergreen tree is planted so that its natural beauty may be seen on lawn or pleasure ground, while so many are busy placing Yew hedges in positions where they are useless or harmful. No tree ever introduced has such soft and fine colour, often taking a bronzy hue in winter, and good all the year round. The stem of an old Yew, too, is one of the finest in colour of the family to which it belongs. It is in the fate of the Yew to be ill-treated by planters and gardeners, who plant it in shrubberies and hedges and seldom deliberately with a view to its final effects, although nothing is worthier of more care and thought in planting. Apart from the ornament, the shade of old Yews is very grateful, especially when grouped not too far from the house.

FREMONTIA CALIFORNICA.

IN its unique combination of physical features California is one of those regions with a soil and climate of its own resulting in forms of plant life only to be found within the narrow range of its own local conditions. Of the many forms peculiar to California one of the most remarkable is this summer-leafing shrub found upon the sun-scorched slopes of the interior, and most abundant in the dry foothills in the southern Sierra Nevada. Discovered in 1846 by Colonel Fremont (one of the early western explorers) it was named in his honour and is interesting to botanists as being the only hardy plant of an order otherwise almost confined to the tropics of the southern seas. On its native hillsides it grows as a low tree of 20 feet with bark and branches of a rich reddish-brown and a stout stem which has been known to measure a foot in thickness. When in leaf its general aspect is suggestive of the Fig in its lobed and rounded leaves of shining green, but they are smaller, less thick, and covered beneath with rusty-coloured down, making the resemblance more apparent than real. The large orange-yellow flowers are borne singly upon short spur-like shoots opposite the leaves, with anthers of a deep orange-red to complete their fine effect. Their size varies with the vigour of the plant from 1 to 3 inches across, and they are borne for several months in unbroken succession, buds showing in all stages of development as the shoots lengthen. A well-grown plant appears covered with long slender shoots completely wreathed in flower.

Culture.

Yet the Fremontia is a scarce plant in British gardens, being not only somewhat tender during severe winters save in the warmer parts of the south and west, but also sometimes dying suddenly without apparent cause, and too difficult of increase to be readily replaced. These are serious faults in an otherwise noble plant, but its fine appearance where conditions are in its favour has gained for it many friends, and the success obtained in places very varied as to conditions makes it certain that with care its rich beauty might be enjoyed more generally than is now the case. The first essential is a light, warm soil, well drained at all seasons, for stagnant moisture is death to the Fremontia, while too hot and dry an aspect is also against good growth. Though not of a habit well fitted for walls, in many parts it is best grown in this way, a west or south-west aspect being better than one due south, while plants facing north have sometimes done well, coming unharmed through frost which has proved fatal to those more sheltered. This but emphasises the fact that it is often a mistake to plant tender things in the warmest places, where a few weeks of bright weather induce a false start, followed by injury or loss. In gardens such as are naturally sheltered, along the southern coast and upon the warm soils of Surrey, the Fremontia grows well in the open as a standard shrub, and when well wrapped up in winter may come to no harm during a series of mild years; but even with some loss of effect the plant is safer against a wall and blooms earlier. The flowers open from the end of May or

early in June, lasting into August or even September when the weather is genial; though the rounded seed-vessels are freely produced as the flowers fade they do not ripen. Old-established plants will cover a wall-space of 20 feet or more, and as such develop it is important so to train as to secure for every shoot laid in a full share of light and air. The old plant at Coombe Wood—one of the best ever raised in this country—was grown from seed sent to Messrs. Veitch from California, and plants so raised are probably the best. It is commonly grown from layers or cuttings of the young wood started under a bell-glass in gentle heat during spring, but their slowness in rooting points to seed as being the more natural method. Finely grown specimens are not uncommon along the southern coast, but the existence of thriving plants, in the open, at not a few points inland, and even as far north as Cheshire, shows what may be done where skill and patience are combined.

The Fremontia is nearly allied to the Mexican Handplant (*Cheirostemon*

platanoides), so named from its bunch of five stamens united in the shape of a hand. In its native country this tree



THE FREMONTIA IN FLOWER.

reaches 60 feet in height, but is too tender for the open in Britain. In culture and appearance it comes very near this Californian shrub, while its purple

flowers are so nearly identical with it in structure that some authors have classed them together under the name *Cheiranthodendron*.

REHMANNIA ANGULATA.*

IF hitherto uncommon, the *Rehmannias* are not unknown to gardens, though the new kind shown in our plate has created fresh interest in the group to which it belongs. They are all perennial herbs from the Far East, of the easiest culture, whether in the greenhouse or the open border, flowering freely through a long season. The oldest species, *Rehmannia chinensis*, has been introduced at several periods since its discovery in 1835, but its lack of colour has resulted in speedy neglect. The Rock *Rehmannia* (*R. rupestris*), though a prettier plant, has never been in general cultivation, and two other species, described by botanists, have not yet been introduced.

The new plant, *Rehmannia angulata*, aroused conflict of opinion at the outset, being regarded by some as an improved form of *R. chinensis*; authorities are now agreed in considering it as a distinct species for which we are indebted to Messrs. Veitch. Their collector in the Far East, Mr. E. H. Wilson, has made valuable finds within recent years, and this new *Rehmannia* is one of his gains. Too tender for the open border, it is well fitted to brighten the greenhouse during summer with its tall, erect spikes of 2 to 3 feet, bearing a succession of flowers from the base upwards over a period of many weeks. As is common with plants raised from seed, there is some variation as to colour, and seed-

lings of bright tone such as that drawn by our artist are superior to the paler shades which sometimes occur. It gained an award of merit from the Royal Horticultural Society in April of last year, and has been shown on many occasions since in proof of its long season of usefulness. One of its best features is the ease with which it may be grown in pots so small as to be readily concealed, while the tall stems display the blossoms to the fullest advantage. It thrives in any light fertile soil, developing quickly from seed, and is best grown quite cool to prevent the spike—naturally long in the joints—from becoming ungainly.

We complete our note with a rapid review of the other known species, which include:—

Rehmannia chinensis.—A free-growing perennial, vigorous as a *Pentstemon*, which it somewhat resembles in habit. Its long yellow roots are so nearly hardy as to pass a mild winter in the open with some protection from frost, but being apt to perish in severe seasons a reserve should be kept in a cold frame. Its oval leaves, growing in a low tuft, are thick, fleshy, and deeply toothed, hairy all over and reddening in the sun. The spreading tubular flowers are of large size, appearing in May and borne in drooping clusters upon short erect stems; their colour is reddish-yellow, paling to dull yellow, and spotted with deep violet in the throat. The plant may be grown for the greenhouse in early spring, or for the border and rock-garden during summer, when it blooms freely, producing fertile seed from which a stock may be maintained. It is also easily increased from offsets or cuttings of the fleshy root, which soon become established in small pots. Discovered and introduced from northern China in 1835 it has several times disappeared and again come into cultivation, sometimes under the name of *R. glutinosa*. Its lack of favour—spite of large flowers and graceful habit—is due to its dull colour, seedlings being often

* With coloured plate from a drawing by H. G. Moon, at Chelsea.



BEGONIA ANGULATA

too dingy for effect. In the course of its chequered history the plant has passed under several names, being at first mistaken for a Foxglove, then called *Gerardia*, and finally *Rehmannia*, in honour of Joseph Rehmann, a doctor of St. Petersburg.

R. rupestris.—A pleasing greenhouse perennial from western China, introduced in 1890, and still rare in gardens. It is of pretty habit, with numerous stems of 12 to 18 inches, those in the centre standing erect, while the side-shoots droop gracefully on all sides. Its ovate fleshy leaves are deeply toothed, and

ITALIAN GARDENS. — Pursuing our series upon such famous southern gardens as have influenced garden craft, ancient and modern, we give a scene from the grounds of the Villa Pamphili-Doria, one of the great Roman houses whose garden was created while its owner occupied the Holy See as Pope Innocent X. This was one of the most important of the old gardens in the



THE PAMPHILI GARDENS, ROME.

covered with long silky hairs; the widely tubular flowers, opening in July, are white daintily shaded with rose.

R. lutea.—A Japanese species of which little is known, save its description, from which it appears to be a pretty little plant with yellow flowers, quite distinct from those in cultivation.

R. Piasezkii.—A Chinese species described by the Russian traveller Maximowicz, but as yet unknown in gardens. B.

suburbs of Rome, but being less central and reputedly unhealthy, it was less frequented than others of the great gardens thrown open to the public by the princes both of Church and State. The entrance to the grounds, richly adorned with statuary and architectural dressings, commands a view of the palazzo, a small but beautiful structure almost covered

with antique relief work of the finest character. So exquisite is much of this work that it seems sad to expose it to the weather, which is fast telling its tale even in so soft a climate as that of Rome. But the charm of the Pamphili gardens lies in the profusion and luxuriance of their vegetation, and even where there is much stone work it is so draped and varied by plant-life that the artificial sinks into its true place. From one point is gained a distant view of St. Peter's, with such a foreground of green slopes studded with Stone Pines, Aloes, Evergreen Oaks, and the like, as to form a favourite subject with landscape painters. The plan of the alleys and shrubberies recalls the famous Bosquet of Versailles, as do also the fountains, though on a much smaller scale; in fact, the plan of both the house and its surroundings are so like Versailles in miniature as to give weight to the claim that this old Roman villa served as a model for the great French palace. Amongst the striking features of the gardens are their fine groups of Stone Pine, many of great age and beauty, beneath whose shade in early autumn, generations of the Roman populace have sipped their wine and nibbled the sweet nut-like kernels fallen ready to hand.

WOODLAND MUSIC.—It is good to listen to the wind minstrelsy till one can say with closed eyes whence it is blowing and what is the time of year, simply from the music overhead. Winter has its own wild chords which change and soften when the tree-tops are a maze of swelling buds, till in early May-time the sounds are most winsome of all. But at all times there is music to be had for the heeding; music in which the initiated may hear mysteries unutterable in human tongue.—M. R. J.

THE PERENNIAL TROPÆ- OLUMS.

THAT these plants are beautiful is not to be denied; that they are popular with growers can hardly be urged. Their beauty of structure in every detail, their quaint form and fine colour, their very vigour and the rich grace of their display wherever at their ease, are charms with which few groups are so richly endowed, and yet many of these dainty trailers have died out of cultivation, while others flourish only here and there with a caprice which has earned for them a bad name amongst growers. They are not common in gardens as a whole, though often abundant in those districts to which they seem best suited, and yet the fact that patient effort to establish the most uncertain kinds is often crowned with full success after repeated failures to coax them into beauty, proves that the skill of the adept can do much to remove the causes of failure, be they what they may.

Natural Conditions.

There are about thirty distinct kinds of these perennial trailers, and a few garden crosses, the whole series offering a rich variety in colour, foliage, and time of flower. A good many kinds—many of them of great beauty—have never reached this country, and others have died out, or have, at least, disappeared from public gardens and trade lists, though from time to time one comes across one kind after another surviving in places to all appearance the least likely. Though their precise range is unknown—being favourite garden-plants throughout a vast region—they

are all found in South America, where several kinds are widely grown and their roots eaten as food, the natives using them for beauty and for profit around their huts much as the English mechanic sets his line of scarlet beans. Though some kinds are widespread and others local, most of them come from the narrow temperate zone west of the Andes and overlooking the Pacific, and extending from New Grenada to Chili; it is in the peculiar climatic conditions of this region that must be sought the explanation of the delicacy of some kinds with us. They grow, often in half-shade, upon the mountain slopes, shrinking from the heat of the plains and yet destroyed by a touch of frost, and their seasons of vigour and rest are mainly governed by the come and go of the moisture-laden ocean breezes.

*Conditions
with us.*

Their needs and the conditions of success in this country are so varied, and at times so surprising, that he would be a bold man who dared to fix rules for all places alike. Kinds that flourish like a weed in Scotland will die out repeatedly in another part of the country, even after great pains have been taken to reproduce exactly what seem to be the ideal conditions of soil and aspect. A few brief indications are, therefore, given with the best kinds, as to the means generally successful, and growers must vary and adapt such hints in the light of local conditions and experience. Some kinds do well almost anywhere, and for the enthusiast there is always a pleasure in inducing the more delicate kinds to do well because of their assumed

difficulty. The greenhouse kinds are in their full beauty in early spring and richly repay whatever care has been spent to get them to perfection. All need great care in watering, the more before growth has fairly begun, and they all dwindle under too strong a degree of heat, while nearly all may be increased by careful division when at rest, and a good many may be raised from seed when it is to be had good. The list of kinds is given with their English names, but for ease of reference they are ranged according to the alphabetical order of their botanic names.

*Best Kinds and
their Uses.*

There are few plants more varied in their use than the Tropæolums, and various kinds may be had in beauty almost throughout the year. The pretty little tri-coloured kind and many other fine plants of the greenhouse section may be had in bloom from quite early spring until the first hardy sorts begin to flower. These trailing kinds for the open garden are of great beauty, of no trouble to grow, and succeed in poor soils. Leichtlin's and Knight's Tropæolums are good anywhere upon dry banks or hanging from nooks in the rock-garden, and these hardy kinds may be followed by others such as Moritz and Smith's kinds, the Perennial Canary Flower and Tropæolums *tricolor* and *pentaphyllum*, raised from seed in heat and grown as annuals in the summer flower-garden. The splendid Flame-flowered Tropæolum is in full beauty in early autumn; while Wagner's rare kind and *T. tuberosum* maintain their autumn display far into

November. Most of the twining kinds are best left to ramble over shrubs, or to find their way upon an evergreen hedge or light trellis of woodwork, doing better thus than against walls with risk of drought and dry heat. *T. pentaphyllum* grows very well in a warm spot, standing heat better than most, and such kinds as *tuberosum*—which blooms late in the year—are best against a wall, often failing to flower if much exposed. When no suitable support is at hand, a spread of fine twine netting is a good help for the slender rambling shoots, giving strength without rigidity, and allowing free passage of air to all parts in a way not found upon a wall surface. Similarly, the greenhouse kinds are best trained over light twine, which allows of the syringing so necessary to keep down red-spider (their worst enemy) without risk of strain or root disturbance, which is much against them when in full growth. The ease with which many kinds may be lifted and stored away during winter is also a great gain.

THE WHITE TROPÆOLUM (*T. albidiflorum*).—A scarce plant in its own country, and perhaps only a colour variety of *T. polyphyllum*, and known from it by the whiteness of its flowers, passing into deep yellow in the claw and tinged with pink on the outside. It was at one time grown in the Brussels Botanic Gardens, but possibly never reached this country.

THE BLUE TROPÆOLUM (*T. azureum*).—In spite of the beauty of this plant when well flowered it is rarely seen in vigour and fine condition. Here and there a grower succeeds in flowering it fairly well, and in the South of France it may be coaxed along in the open with some trouble, but it never seems to grow with the freedom of other kinds, and in a feeble state its flowers are of a pale and disappointing blue, though their colour is naturally rich. Coming from the central provinces of Chili

it is less hardy than most other species, and is always a slender, delicate plant. It grows 4 or 5 feet high in its native country, with small long-stalked leaves divided deeply into four or five variously shaped but narrow lobes. The solitary blue flowers are about an inch wide, borne upon thread-like stalks a little longer than the leaves, and composed of five equal spreading petals. The plant should be potted in September in very light open soil with abundant drainage, and allowed to start at its own time in a cool house or frame, water being increased very gradually with growth. The roots must never be disturbed while active, and the plant goes to rest again in May after flowering. At no time will it bear much heat, but needs water while in full growth, and a little weak manure. The roots should be kept quite dry from June till the growing season.

BEUTH'S TROPÆOLUM (*T. Beuthii*).—A tuberous-rooted trailer from Bolivia, bearing conspicuous yellow flowers and rounded but deeply-cut pale green leaves. 1850. A greenhouse plant flowering in June.

THE SHORT-SPURRED TROPÆOLUM (*T. brachyceras*).—A slender climber with the habit and foliage of the Tricolor Tropæolum, and yellow flowers streaked with red and something less than an inch wide. The petals are almost equal in size and regularly rounded except for a notch at the top. The spur is very short, and hidden when the flowers are held erect at maturity. A native of Chili, introduced in 1840. It is one of the commonest plants about Santiago, climbing over shrubs many feet high and called by the natives the Partridge Flower. A tender, tuberous-rooted greenhouse twiner, flowering in June.

PLANCHON'S GOLDEN TROPÆOLUM (*T. chrysanthum*).—A fine yellow-flowered climbing plant with small, oval, hairy leaves and medium-sized flowers of a uniform golden yellow with a short spur. It is a very pretty plant from the temperate parts of New Granada, flowering freely in the greenhouse during summer, but now scarce in gardens, and perhaps not in cultivation.

THE NOTCH-PETALLED TROPÆOLUM (*T. crenatiflorum*).—This has pretty bright yellow flowers about an inch wide, with crimson veins in the two upper petals, and semi-circular leaves with rounded lobes. The habit of the

plant is rather straggling, and the foliage and flowers distant and scanty in effect. A greenhouse plant, flowering in early summer, introduced from Peru about 1845, and, compared with others, not very ornamental.

DECKER'S TROPÆOLUM (*T. Deckerianum*).—A singular plant with tri-coloured, hairy flowers and undivided hairy, peltate leaves. Roots fibrous; stems climbing to a considerable height, and bearing leaves sometimes as much as 6 inches across. The spur of the flowers is $1\frac{1}{2}$ inches long and of vermilion-red, except at the end, where it is green; the petals are small and of azure-blue, passing into purple at the base and daintily fringed. This beautiful plant is a native of Venezuela, but only found in one part, though there are several other species akin to this from the same region, which are very handsome. A rare greenhouse plant, flowering in mid-summer, and formerly grown in the Berlin Botanic and other collections.

THE TWO-PETALLED TROPÆOLUM (*T. dipetalum*).—A distinct kind formerly grown on the Continent if not in this country. Its flowers bear only two petals, the three lower ones being suppressed; these are large and conspicuous, and, as well as the calyx, deep red or crimson. In foliage, too, this is unlike any other kind, the leaves being lobed with rather broad rounded lobes, and the stalk inserted just within the blade. The whole plant is smooth and glossy, with stout stems. Native of Peru.

FINTELMANN'S TROPÆOLUM (*T. Fintelmanni*).—A slender twining plant of very light appearance, bearing semi-circular leaves of filmy texture variously lobed, and small scarlet flowers of about three-quarters of an inch wide in the leaf axils. A dainty but scarce plant, with prettily contrasting colours of pale green and red.

PERENNIAL CANARY CREEPER (*T. Heyneanum*).—Another very beautiful greenhouse climber with flowers akin to those of the common Canary Creeper but rather smaller and of an orange colour; they are distinct also in shape of flower, the lower petals being nearly as large as the upper, with a straight spur instead of the hooked claw of *T. aduncum*. Peru. Not now in cultivation, though at one time common in Germany, and easily raised from imported seed.

JARRATT'S TROPÆOLUM (*T. Farrattii*).—A mere colour variety of the Tricolor Tropæolum,

flowering at the same season and identical with it in growth, but perhaps a little less vigorous and with a little more of yellow in the flowers.

LEICHTLIN'S TROPÆOLUM (*T. Leichtlini*).—A fine hardy plant coming as a cross from *Ts. edule* and *polyphyllum*—two of the most robust kinds—of which it shows all the hardiness and vigour. Its rounded tubers are of the size of small potatoes, emitting trailing stems of several feet during spring, covered with deeply-cut leaves of greyish-green like those of *polyphyllum*, but with longer, narrower leaflets. The flowers are also similar, but of a deeper orange-yellow, finely marked with reddish spots and streaks, and appearing with rich effect from the end of May. The plant is of free growth, covering much space when well established in warm, well-drained soil, where it increases rapidly. It is best seen trailing over a bank or low wall, where it can grow undisturbed and not be missed while at rest from July onwards. It is quite hardy in most gardens with a light covering of leaves or ashes.

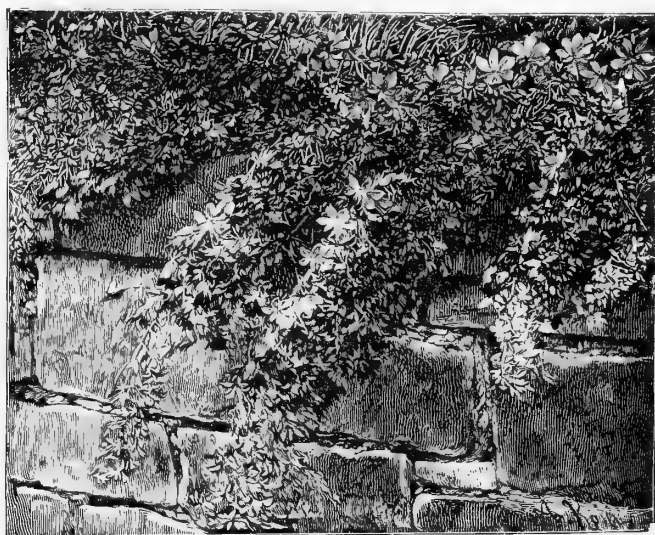
LINDEN'S TROPÆOLUM (*T. Lindenii*).—A greenhouse climber bearing small flowers with a very long cone-shaped spur, appearing in early autumn; the leaves are bold, 3 to 5 inches across, and of a pretty rose colour. A kind of recent introduction upon the Continent, more beautiful in leaf than in flower.

MORITZ'S TROPÆOLUM (*T. Moritzianum*).—A very handsome greenhouse twiner with large glossy leaves 5 or 6 inches wide, borne upon long stalks and divided into six or seven broad ill-defined lobes, each bearing at their apex an orange-coloured tip. The funnel-shaped flowers appearing in July are of medium size, with petals nearly equal and a straight greenish spur. Their colour is yellow shading to orange on the lower petals, and brilliant cinnabar-red finely veined and shaded above, the whole delicately fringed upon the margin. It is one of the most beautiful of the group, and a native of New Granada. Rare in gardens but easily raised from seed. Syn. *T. Funcki*.

THE DROOPING TROPÆOLUM (*T. pendulum*).—A plant with drooping flowers from Central America, bearing in midsummer yellow flowers marked upon the upper petals with red lines and a dull purple spot. The five-lobed leaves are borne upon stout rounded stems and are a whitish-grey colour beneath. Greenhouse.

FIVE-LEAFLETED TROPÆOLUM (*T. pentaphyllum*).—A pretty plant used with fine effect in gardens during summer either to cover walls or ramble over shrubs in a sheltered corner. As in *dipetalum* the flowers consist of two petals only, which are small and red, and borne upon a long trumpet-shaped tube or spur, sharply hooked near the base, and its deep purplish-red colour finely contrasted with vivid green in the calyx lobes. It grows freely, flowering in June and July, and may be used cut in long trails with the prettiest effect, the deeply-cut leaves being graceful and the stems a fine rosy colour. It thrives in light rich soil upon a sunny border, or even facing east if well sheltered. The rounded tubers are easily lifted and stored in the autumn when the plant is cut down by frost. One of the easiest to grow, increasing fast in good ground and readily known from other kinds. A native of Uruguay, growing in rich profusion round Buenos Ayres, and, though an old plant in English gardens, not at all common.

THE GREY ROCK TROPÆOLUM (*T. polyphyllum*) shown in our engraving is one of the best of hardy tuberous plants. It has a wide range in the Andes of South America, thriving at a height of many thousand feet as far south as Chili, and quite the hardiest and most vigorous of the group. It varies much as to habit and



GREY ROCK TROPÆOLUM.

form of leaf in different parts of this immense range, but is commonest in gardens, as a low trailing plant of compact habit and stout fleshy stems thickly clothed with finely-cut grey foliage, and many golden flowers in June.

Once well established in a bank of good soil it flowers freely, spreading fast by long underground stems which force their way through the hardest soil. When in full sun its shoots are rich in colour, running about 2 feet before flowering, but they lengthen when grown among shrubs; cut trails are useful and very pretty for decoration. The tuber is of a peculiar oblong shape and dark red in colour. Hanging from a niche in the rock garden, or trailing from a low wall or sunny bank, its finely-coloured leaves and flowers are very handsome, and when well planted it needs no further care.

THE SESSILE-LEAVED TROPÆOLUM (*T. sessilifolium*).—This kind is near akin to the last, if, indeed, it is not a form of it. It is also of prostrate habit but very compact in growth, its shoots not exceeding 8 inches, with much smaller leaves, which are thickly set and almost stemless; its red and yellow flowers of medium size are carried freely upon short stems when planted in a sunny spot and good light soil.

SMITH'S TROPÆOLUM (*T. Smithi*).—A beautiful plant widely dispersed and growing at a great elevation in the Andes of north-western South America. It is a twiner of free, robust habit, bearing smooth glossy leaves deeply cut into five broad lobes, about 3 inches wide in all and carried upon long stalks. The flowers are large and funnel-shaped, ending in a long green-tipped spur; the calyx is rich ruby red with finely fringed and lobed petals of orange veined with bright red. A very handsome plant flowering in June and July, which may be treated as a greenhouse perennial or a hardy annual during summer.

THE FLAME-FLOWERED TROPÆOLUM (*T. speciosum*).—The most brilliant of Tropæolums, yet quite free from the gaudiness of the annual kinds. It grows in the southern provinces of Chili, and is one of the kinds difficult to establish in some gardens. In its native country it sends up a maze of slender twining shoots which completely cover shrubs and low trees of 15 and 20 feet and are aflame with flower. The bright scarlet flowers appear from June throughout the summer, borne upon long stalks overtopping the leaves, and hanging in rich festoons from the upper part of the shoots so thick with colour as to hide the foliage. Though quite hardy it is not easy to grow in all places,

doing best in districts of a cool and moist atmosphere, though in a well-chosen spot it may sometimes do well after repeated failure in others but a few yards distant. The roots need shade and often thrive on the north side of evergreens through which the long shoots ramble, and in this way the plant is seen at its best. In planting, the roots are generally started in pots of light soil which are sheltered from wet until growth has fairly begun and put out without disturbance when the plants are in active growth; a layer of sandy soil around the tubers preserves them from too much wet. Once established the plant is best left quite alone, thriving most in light gravelly soil of even moisture; the root fibres show a marked liking for small stones which are often completely netted round. The flowers are succeeded by richly-coloured blue berries in fine contrast with the crimson calyx; where old roots are not to be had the plant is easily raised from seed. The climate of Scotland is favourable to this fine plant, which is seen growing in many parts with great beauty and luxuriance.

THE TRICOLOR TROPÆOLUM (*T. tricolorum*).—The commonest of the greenhouse kinds, easily grown from seed. It flowers in spring and early summer, carrying a profusion of small bottle-shaped flowers about an inch long, composed of a scarlet tube and spur, a dark purple-shaded calyx, and small yellow petals—a combination as pretty as it is unusual. The foliage is light and graceful, with leaves divided into five or six lobes and borne on thread-like stems upon trailing shoots of 8 or 10 feet. Chili. In southern gardens it may be grown in the open during summer, raised from seed and treated as an annual. Under greenhouse culture it rests during summer, is started into growth in early autumn, and flowers in the following spring.

Apart from Jarratt's Tropæolum, now held to be a variety of this, there are two or three minor forms differing mainly in their colour; such are *Tricolor Regelianum* and *Tricolor Schultzei*, in both of which green and yellow are the prevailing colours.

THE ESCULENT TROPÆOLUM (*T. tuberosum*).—A pretty half-hardy plant long known but not common in English gardens, where it is less free in flower than most kinds. In Peru it is grown for food upon the mountain slopes up

to a height of 10,000 feet, the fleshy tubers reaching a considerable size and said to have a flavour of Watercress when boiled; they are distinct and pretty, being of a light yellow colour marked with irregular crimson-purple blotches. The plant is a tall climber running easily to 12 or 15 feet, with fleshy stems and rounded five-lobed leaves, the lobes shallow and somewhat abrupt. The flowers are small but finely coloured, the calyx being a deep red save for a green tip upon the spur, and the petals orange-yellow veined with black. Unfortunately it is often late before it begins to flower, and is cut down by frost before attaining full beauty. In southern gardens the roots pass the winter unharmed with a covering of ashes, but wherever of doubtful hardiness the tubers are best lifted and stored like Dahlias. To encourage early flowering it should be planted at the foot of a wall or fence, and in fine seasons and sheltered spots remains in beauty till November. Where the soil is heavy it should be mixed with sand and lime rubbish, which often induces flower.

THE CLUSTER-FLOWERED TROPÆOLUM (*T. umbellatum*).—A tender kind from the equatorial regions of South America and differing from others in the clustered arrangement of its flowers borne in bunches of four to six blossoms. These are of peculiar shape, orange-red in colour, with three larger petals and two very small and scale-like. Botanically it is akin to *T. pentaphyllum*, with rambling purplish stems and many five-lobed leaves. The flowers of orange and red are very narrow, almost tubular, about an inch long with small erect petals and a green tipped spur. The wild plant grows in the high mountains of Ecuador and Peru, forming a fleshy tuber of 3 to 5 lbs. and was sent home by Lobb in 1846. A greenhouse plant flowering in June, but rare in gardens.

THE VIOLET-FLOWERED TROPÆOLUM (*T. violæfflorum*).—A plant related to *T. azureum* and possibly only a form of it. It is of slender habit with divided leaves, differing from the Blue Tropæolum in its leaflets of unequal size. The flowers are of a fine azure-blue on first opening, with whitish claws to the petals, which are finely toothed at the margin and not entire as in *azureum*. A native of Chili, it grows among bushes in half-shady places. Its tuberous roots require a season of rest, and treatment as for the greenhouse kinds.

WAGNER'S TROPÆOLUM (*T. Wagnerianum*).—A fibrous-rooted greenhouse perennial from Columbia and Venezuela, in habit and foliage more suggestive of a *Convolvulus* than a *Tropæolum*. It is of twining habit with triangular leaves of 2 to 3 inches upon short stems inserted just within the blade. Flowers with a very long crimson spur, a spreading green-lobed calyx, and five equal and very narrow fringed petals of violet-blue. It first bloomed many years ago in Birmingham, flowering in September, and after a short rest again in growth early in the year. It is a curious and beautiful plant of free growth, thriving in light soil and not subject to damp (as are many of this group) even in winter. It is very easily increased from single eyes dropped upon sand under a handlight, but has become rare and is perhaps not now in cultivation.

MINOR VARIETIES.—To complete our survey of the group mention must be made of some five or six kinds of lesser importance, but none of them without interest. *T. cirrhipes* is akin to *Deckerianum*, with flowers borne upon very long stalks which roll themselves around any object within reach, and thus maintain the plant. *T. marmoratum* is remarkable for its large leaves, oval, and finely veined and marbled after the manner of certain *Cissus*. *T. edule* is a vigorous hardy kind, forming large edible tubers, and very like Knight's *Tropæolum* save in its more straggling habit. *T. pinnatum* is a greenhouse plant raised as a cross many years ago and flowering from June until late in the autumn; its flowers are composed of yellow toothed petals. *T. rhomboideum* is a plant intermediate between *Ts. tricolor* and *brachyceras*, grown under glass and bearing in early spring an abundance of tiny bell-like blossoms.

THE SCARLET WINDFLOWER IN PALESTINE.—The slopes of the valley of Ajalon are densely covered with this lovely little flower, and in the valleys of Hinnom and Kedron, outside the walls of Jerusalem, it is difficult to avoid treading on it. One of the finest sights I ever beheld was early one morning when journeying from Bethlehem to Jerusalem. During the night snow had fallen (an exceedingly rare occurrence) to the depth of some inches. The morning, however, was bright and clear, and the sun's rays having partly melted the snow, the dazzling scarlet *Anemone* had forced itself

through the white sheet, standing erect with its large petals flatly expanded, and no other plant or flower visible. In some places they lay in clusters, while the whole plain, far as the eye could reach, was thickly covered with the star-like gems. The scene was one not easily forgotten.—W. V.

SONGS OF THE WOODS AND

FLOWERS: IN A GARDEN.

How vainly men themselves amaze
To win the palm, the oak, or bays,
And their incessant labours see
Crowned from some single herb or tree
Whose short and narrow-verged shade
Does prudently their toils upbraid;
While all the flowers and trees do close
To weave the garlands of Repose.

Fair Quiet, have I found thee here,
And Innocence thy sister dear?
Mistaken long, I sought you then
In busy companies of men:
Your sacred plants, if here below,
Only among the plants will grow:
Society is all but rude
To this delicious solitude.

* * * * *

When we have run our passion's heat
Love hither makes his best retreat
The gods, that mortal beauty chase,
Still in a tree did end their race:
Apollo hunted Daphne so
Only that she might laurel grow:
And Pan did after Syrinx speed
Not as a nymph, but for a reed.

* * * * *

Meanwhile the mind from pleasure less
Withdraws into his happiness;
The mind, that ocean where each kind
Does straight its own resemblance find.
Yet it creates, transcending these,
Far other worlds, and other seas;
Annihilating all that's made
To a green thought in a green shade.

Here at the fountain's sliding foot
Or at some fruit-tree's mossy root,
Casting the body's vest aside
My soul into the boughs does glide;
There, like a bird, it sits and sings,
Then whets and combs its silver wings,
And, till prepared for longer flight,
Waves in its plumes the various light.

Such was that happy Garden-state
While man there walked without a mate:
After a place so pure and sweet,
What other help could yet be meet!
But 'twas beyond a mortal's share
To wander solitary there:
Two paradises 'twere in one,
To live in Paradise alone.

How well the skilful gardener drew
Of flowers and herbs this dial new!
Where, from above, the milder sun
Does through a fragrant zodiac run:
And, as it works, th' industrious bee
Computes its time as well as we.
How could such sweet and wholesome hours
Be reckoned, but with herbs and flowers!

—MARVELL.

FLORA

AND SYLVA.

Vol. II. No. 19.]

OCTOBER, 1904.

[Monthly.

GARDEN ROOMS AND LOGGIA.

OUTDOOR summer life is agreeable to all, but owing to the hard-and-fast ways of our English architects its enjoyment is made much more difficult than need be. If they would travel in Italy, Austria, and other countries, they might see how easy it is to plan part of a house so that in it we may enjoy the free air, warmth, and shelter at the same time. In our country one often has to get quite away from the house to find any such comfort in warm weather or grateful sunshine in winter. True, in gardens of size there are arbours or summer-houses, mostly too far from the house for frequent use, rarely quite dry, often overgrown, uninviting, and for the most part abandoned to spiders and other insects. Then there are seats and lounges also, often beneath trees of dense cover, and therefore open to risk of chill in passing from the outer warmth into the cooler currents that play around such centres. The British dwelling is often set down in its grounds, four-square, ugly, and uncompromising; the house stops short dead, and you must either be wholly in or wholly out, the utmost concession being a draughty porch—open to all comers, French windows—which cannot be opened with-

out cooling the entire house, or the conservatory in whose damp atmosphere one cannot sit. What is wanted is a shelter from immediate glare or treacherous air-currents, which is pervaded freely by the genial glow of surrounding light and air; it should also so form part of the house as to allow of basking in the sun between whiles, even on days of broken weather. The value of such “sun-traps” as an aid to health can hardly be overrated. It should be easy to plan a *loggia* or “garden-room” as part of the house upon its sheltered side. It would be best on the ground floor, but might also be made (as it often is abroad) on the first floor. One gain in this would be that the servants could get to it as easily as to any other part of the house. In our country it is unpleasant for them—as for others—to cross grass or damp paths upon wet days, whatever it may be in fine weather. This open-air room should be part of every house. And when we make garden-houses away from the dwelling, instead of the “fuzzy” “summer-houses” that are deserted after a few years, such shelters should be built solidly to face all weathers, the “rustic-work” of which they are so often built beginning to rot as soon as put up. Let us build, therefore,

of the best material only, local stone or brick, simple in colour, and the roof of stone as in Oxford, Northamptonshire, or Sussex. Failing that, any enduring material such as Oak-shingles, which make good roofs. The floor should be of stone or stout plain tiles, and the walls sound in every way. So planned there is some good use for the summer-house, although not so handy for open-air meals as when the garden room is part of the dwelling. The front, facing south, should be of pillars as in Italy, and it might be so contrived as to be useful in winter by putting in sashes. The nature of our insular climate is such that the kind of half-house and half-garden shelters we describe are more needed with us than in warmer climates, and demand more care in their planning.

RUSTICUS.

ROSE HEDGES.

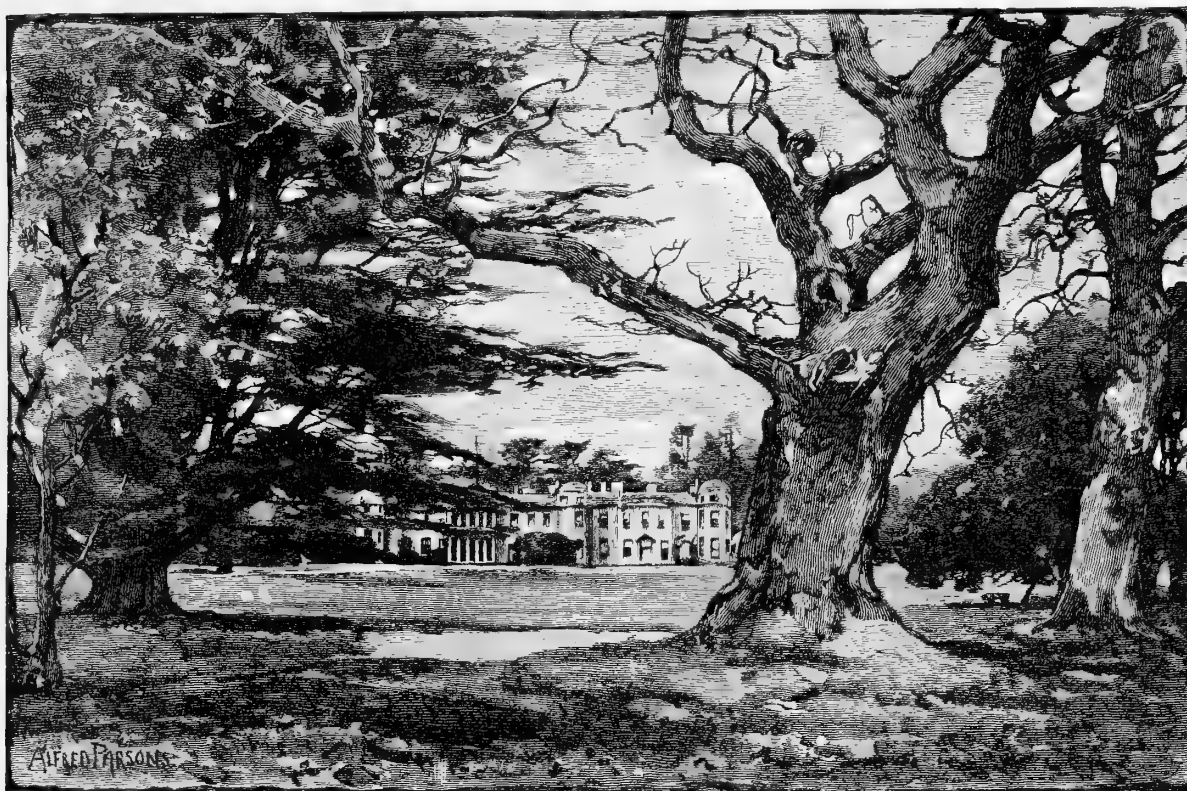
SINCE the ill-named hybrid perpetual Roses have been displaced in Rose gardens by the true perpetual bloomers, it is well to think of other uses for these showy and vigorous Roses, and there is none better than that of forming hedges and dividing lines with them. They give fine effect in their season, though they do not flower so long as the Tea and Monthly Roses, and they are never so good as when grown in a bold way. It is essential that they should be on their natural roots, as if we make hedges of Roses "worked" on the Dog Rose we may soon get a wall of thorns, of which we have many in our hedgerows already! While it is not easy to obtain the Teas and new Monthly Roses on their natural roots there is less trouble about the

red hybrid Rose in that way. Or we can easily strike them from cuttings, and in good ground they reward us by free growth and a longer flowering season. As to support, the roughest trellis will do, as also those made of Oak and iron-work, while a hedge without any support may often be enjoyed. Such "fences" need not be wholly formed of Roses, for Clematis and Honeysuckle may take their place in it here and there, as also some of the finer wild Roses. If we have to do with good Rose soil the work will be light. Mark out position of the hedge 2 feet wide, and trench that space 2 feet deep, using plenty of manure. Where there is doubt about the soil being of the right sort, the whole of it should be removed and replaced with three parts of loam and one of manure. There are many gardens the soil of which, with the addition of one barrowful of loam to every yard length of hedge and about half that quantity of manure, will grow the red Roses well. Plant as early as may be in the autumn or winter, avoid deep planting, keeping the collar about 2 inches under the surface. When planted, a layer of short, rotten manure over the roots will do good. During the first two years little pruning will be needed, the second spring after planting any strong shoots that exceed 3 feet in length should be cut back to that point. In the ground should be placed a few neat sticks, to which some of the lower branches should be tied to form the base of the hedge and bring it into shape. After the second year the growth will gain more vigour and increase in length. The strongest shoots should be cut down to 4 feet the

third year, and from that time the height should be allowed to increase slowly so as to give the lower branches time to fill up the base. The after care consists in giving the roots a dressing of rotten manure every winter, taking the soil from over the roots, laying the manure on them, and then replacing the soil. Any good free-growing Rose should do, such as *Anna Alexief*, *John Hopper*, *Jules Margottin*, *Berthe Baron*, *William Jesse*, *Madame Vidot*, *Madame Boll*, *Madame*

Marie Finger, *General Jacqueminot*, *Senateur Vaisse*, *Dr. Andry*, *Maréchal Vaillant*, *Charles Lefebvre*, *Madame C. Wood*, *Ferdinand de Lesseps*, *Marie Baumann*, *Dupuy Jamain*, *Annie Wood*, *Reynolds Hole*, *Gruss an Teplitz*, and *François Coppée*. Where borders of hardy flowers are made through kitchen or fruit gardens some kind of background is needed for effect, and there is no better one than a hedge of well-grown Roses.

ROSARIAN.



CEDARS AT GOODWOOD.

THE GREATER TREES OF THE NORTHERN FOREST.—No. 19. THE CEDAR OF LEBANON (*Cedrus Libani*).

A BEAUTIFUL name for the most stately and beautiful tree ever introduced to our country, either as a woodland or as a pleasure-garden tree. Not its least precious quality is its hardiness, proved by

200 years of existence in Britain, in all sorts of soils and situations from the chalk of Goodwood to the free Surrey sands of Pain's Hill and the alluvial of Whitton. Its hardiness is explained in part by the fact that it is a tree not far removed from our own regions, the mountains of Asia Minor and North Africa being geographically not far from those

of Europe, and in these mountains it grows high up in a climate like our own, and among plants native to this country—like the Yew, the Thorn, and the Lily of the Valley—in conditions which are very unlike those of the Californian conifers. The Cedar called *atlantica* in lists is a variety of this, and though good is not essentially better as a forest tree. These noble Cedars are often put to an unfair test as to endurance by being planted apart from other trees. Think



CEDAR OF LEBANON: FORM OF ISOLATED TREE.

of the weight that an isolated Cedar of Lebanon, with its huge spreading arms, has to carry under heavy snowfall, and how much better able to bear it are the trees planted in woods with mast-like stems. The remedy for a great loss of valuable trees lies in planting in more natural ways and in keeping the trees together. Each planter seeks the finest development for his Cedars and so selects the best soil and position, often digging a big hole for each tree and

putting in many loads of earth. This is harmful, first in causing a too rapid growth and soft wood, and secondly, any proofs that the soil and other conditions of the place suit the tree is withheld from us by the artificial soil and the changed natural conditions. The tree in its native state inhabits high mountains, often on shaly slopes on which they are healthy, though never so large as where there is some soil. Instead, therefore, of taking the very best soil we should plant upon rocky or sandy places where the tree will, though at first growing slowly, eventually get a safer and harder growth than it ever would on rich deep soil. This should not prevent our putting a group in the pleasure grounds for the sake of their shade. Also it is well to plant it in woodlands, where the trees would be drawn up with a tall stem of fine effect near drives, and as groups in the woods.

Area.

Lebanon is but a small station of the Cedar, and happily there are vast forests of it in Asia Minor and the Taurus mountains, in Algeria and the Atlas Mountains, within a zone of, roughly, 5,000 feet high, and where the snow lies all the winter so thickly as to be still unthawed early in May, when I was in the forests. It is found, too, in Cyprus—a country in which we have now some interest.

Wood.

The wood of the Cedar is delightfully fragrant and good in colour, a brown or yellow-brown of a warm shade, with the sap-wood well marked. The grain is fine and soft, taking a high polish of especial value in all kinds of ornamental woodwork.

This quality, however, is only found in trees grown in their native area. In those altitudes the brief yearly period of growth, the shortness of the seasons, and the heat of the sun, all go to the forming of hard, even, and seasoned layers. When the tree is grown outside its natural zone, in a climate milder and more variable, the annual layers are thicker, irregular, and imperfectly ripened; such wood is soft, light, want-

to be at least a thousand years old and was still sound.

Rate of Growth. The idea that this tree is of slow growth is an error; it may prove so if we plant large and showy "*specimens*," but when planted small, as all trees should be, its growth is rapid. But to get the best results we should encourage it to shoot upwards and not spread into vast limbs. The late Mr. Robert Marnock wrote



GROUP OF CEDARS IN NORTH AFRICA (NEAR BABOR) ON MARGIN OF OPEN SPACE.

ing in colour, and almost scentless. Our way of planting the Cedar in most unnatural conditions makes its wood soft and the tree less enduring. If we plant it in the ordinary soil of the valley or hill we should get a better result in every way and as good wood as from the native trees. I remember seeing at Carthage a great piece of wood that had lain buried among the ruins of that ancient city; from its position it was supposed

to me as follows—and he was a good witness, having planted many thousands of these trees during his long life:—“During a more than forty years daily occupation among trees, I have felt a growing affection for this glorious gift of Nature. The grand old Cedars at Upper Gatton and Warwick Castle are examples of what Cedars become in moderately favourable circumstances; and examples fully as fine could be given

in various other localities, notably at Pain's Hill in Surrey. Having said this much it may seem unnecessary to add, that during all these years I have, as often as opportunity offered, felt it as an obligation laid upon me to influence all whom I could persuade to plant Cedars, and I look back with no small satisfaction to what I have been permitted to accomplish in this way. With ample evidence to the contrary, it is marvellous to find so many people clinging to the fallacy that the Cedar is of slow growth. It is quite true that a Cedar or any other tree will grow slowly, planted, as it often is, in exposed and draughty situations upon open lawns—a treatment to which so many Cedars are cruelly subjected. If Cedars are planted like other ordinary trees in the shelter of common plantations that are properly attended to and duly thinned, I venture to assert that they will surpass in height and bulk of growth the ordinary evergreen trees, and not only so, but that this growth will be maintained.”

Increase and Planting. The noblest use, then, for the Cedar of Lebanon is as a forest tree. Like all the Pines it lives its life in companies and is far more worthy of being so planted than almost any of the American conifers—save, perhaps, the Douglas Fir. Plant the Cedars young and rather close, as when planting any other Pines. I am planting a few acres of Cedars this autumn—seedlings not over 1 foot high, alternated with Larch. This tree, which clothes the scanty ribs of the mountains of Cyprus and North Africa, will not fail us upon the hills and in the valleys of England. Anyone may

see the result of what I mean here and there (as in the long covert at Shrublands), but not often, from the rooted idea that the Cedar can only be used as a lone “specimen.” In speaking of the Cedar I refer only to the Cedar of Lebanon and the Atlas form of it from the mountains of North Africa, and never to the Deodar, which is tender in our country and of value only as a pleasure garden tree. The tree is so easily increased that though usually treated in nurseries as a “specimen” there should be no difficulty in getting small healthy seedlings, at least from forest tree nurseries. It begins to fruit at about fifty years, even in our country, and with vast forests fruiting freely within reach of all the great seed-houses of Europe there need be no trouble in getting a good stock of it.



The cone takes two years to mature and contains about 100 seeds. After steeping in water from twenty-four to thirty-six hours the woody scales can be easily detached, and the seed will not suffer if dried in the sun.

For supposed safety in packing and planting, Cedars are grown in pots in continental nurseries; these are always deceptive in result, the roots often almost a distorted clinker, and when disentangled, as they always should be, these plants often perish. The rabbit is a true artist in his love of the Cedar, gnawing every bit of bark off the little trees, and if not killing them, preventing any

healthy growth; therefore wiring is necessary for some years, and stronger supports to the wires than are usual. In many places there is iron fencing not in good use, which might be placed round the plantation, and with that as an aid wiring may be effective in all weathers and seasons. In a tree of such classic beauty and associations it is well to take a little more care than we bestow upon common forest trees. Plant Cedars of such small size in lines 8 feet apart and the trees in each line about 8 feet apart, with Larch or some other free-growing tree between; that is to say, a line of Larch between each line of Cedars both ways. This does not mean that they would be so crowded eventually. It is beneficial to the young trees that the ground should be well shaded as soon as it may be, and as the trees grew up the Larch or other trees would be cut away and the Cedars themselves, if too thick, would be eventually thinned. Close planting and a cool canopy overhead does not imply that each tree should not have sufficient room to develop its true forest size and dignity—and the Cedar is a big tree.

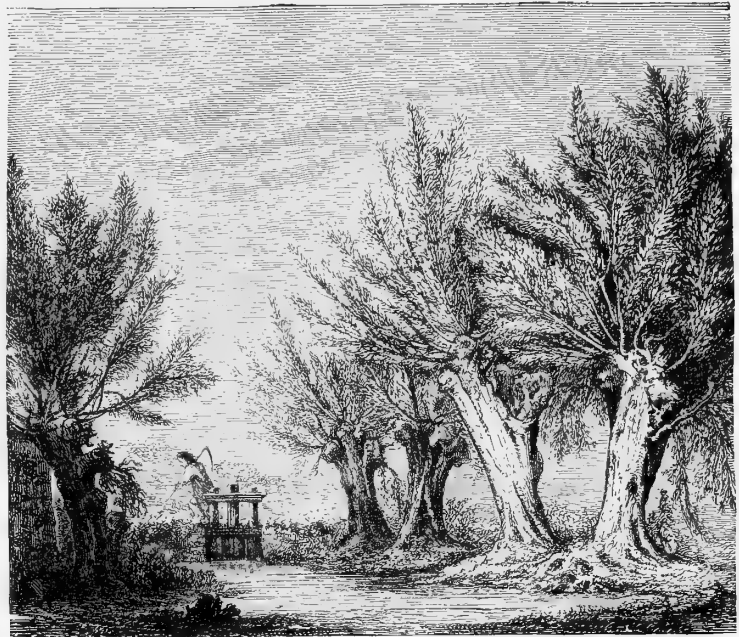
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SYNONYMS.—The Cedar of Lebanon is *Cedrus Libani* of Loudon; *Cedrus patula* of Koch; *Abies Cedrus* of Poiret; *Larix Cedrus* of Miller; *Pinus Cedrus* of Linnæus; *C. L.* var. *atlantica* of Manetti; and var. *brevifolia* of Hooker.

POLLARDED TREES.

AMONG the most characteristic objects in our river valleys, such as that of the Thames, and in our well-watered pasture land, such as the

district which lies between the Mendip and Quantock Hills, are the rows of round-headed Willows which fringe the banks of almost every watercourse. These pollards begin their life as a simple row of stakes, originally, perhaps, the upright posts of a fence; but the Willow has such vitality that the stakes take root and in a few years form trees. The stake, sawn off straight at the top, usually sends out a crown of shoots, and thus starts at once in its ultimate form, but should young trees or untrimmed boughs be planted, they are sawn off when they have reached the desired height of stem. There are various reasons for this treatment of the Willow, which in its natural form is a beautiful tree. The principal one, no doubt, is that old Willow timber has very



little value, whereas the young boughs which spring from the polled trunk are useful in any state of their development. When young they can be used for basket and wickerwork, though in the districts where the many kinds of Willow are cultivated for that purpose they are grown in beds and the stem cut close to the ground. When older they are much used for rough post and rail fencing, and for various other kinds of farm work. While they thus supply useful wood and with their mass of roots strengthen the banks of watercourses, they are not so injurious to the grass around them as larger and more spreading and heavy-leaved trees would be. A thickly-planted row, when the heads are allowed to grow large, forms also

a good shelter for rickyards, and serves to break the force of the wind over crops. In Holland and Belgium the long rows of round-headed Willows stretch for miles across the marshy meadows, and are the only objects that arrest the eye on these interminable flats, unless it be a windmill or a church steeple in the misty distance.

The trunks of these pollard Willows are very interesting studies to the naturalist and the artist, for the young heads often grow upon very old shoulders. The wood in the centre generally decays and makes a favourite nesting ground for birds and for boring caterpillars. Seeds are blown or dropped on the top, and send their roots first into this decayed wood, and finally through it into the ground, so that one may often see a large Elder, a young Ash tree, a Gooseberry bush, or a mass of Dog Rose or Bramble springing up among the Willow boughs. The Willow itself will even form roots at the crown and send them down to the soil through its own hollow trunk. In this tangled mass wood-pigeons and doves make their nests, and under the projecting head, scarred and swollen with the wounds of years, wrens hang their little covered houses, built of the same moss that covers the trunk. In the rotten wood small woodpeckers and wrynecks make their neat round borings, tenanted in after years by tomtits and other birds, and I have found the nests of sand martins, where there was no available sandbank handy, in the dry tinder-like wood exposed by the splitting of an old pollard.

The trees represented by the illustration are comparatively young, and the branches which are being lopped are only the growth of five or six years at the most. When older the trunks generally split and lean either towards the water, or away from the direction of the prevailing winds like the Apple trees in an old orchard. They then become very picturesque, assuming quaint forms and often dividing into two distinct masses. Although the Willow is the commonest of pollard trees, others are also polled for various reasons and uses. The Lombardy Poplar, for instance, when planted as a protection round buildings, is often pollarded in order to prevent danger from its

falling, and the Ash, Hornbeam, and Wych Elm are pollarded for poles; the knotted heads of this last are also very beautiful for cabinet work. The Mulberry trees in North Italy are pollarded every year; the young shoots and leaves are given as food to the silkworms, and the stems form supports for the vines, which are festooned from one tree to another down each side of the long patches of corn or lentils.

In some parts of Suffolk, and no doubt in other counties, the Oaks have been much pollarded, and some of the finest Oaks we have ever seen have been so cut in past times, as also were Yew trees. P.

MAGNOLIA CAMPBELLII.*

I HAVE known this most beautiful of all flowering shrubs that are natives of temperate climates ever since it first bloomed in Europe many years ago in the garden of my late friend, W. H. Crawford of Lakelands, near Cork. It is perfectly hardy, but has unfortunately the great drawback of requiring a mild spring and the absence of late frosts to enable it to expand its beautiful flowers, which appear before the leaves and have no protection save the bud-sheath, which falls away when the flower-bud begins to swell. It may be counted on to bloom about every third or fourth year, flowering very freely when it does so, my tree having produced 147 fine flowers in the spring of 1902 and not one in either 1903 or 1904. I am in hopes of having some flowers next year, but shall not be surprised if it does not flower again till 1906. The much older and taller specimen in the splendid Arboretum of my neighbour, Lord Barrymore, on Fota Island, was a most beautiful sight in the spring of 1902, when it bore nearly 300 flowers. As its wood is unfortunately extremely brittle and likely to snap off

* With coloured plate from a drawing by H. G. Moon at Belgrove, Queenstown.



MAGNOLIA CAMPBELLII.

if exposed to severe gales of wind, it should be planted in as sheltered a position as possible. Those who are not acquainted with this splendid *Magnolia* will welcome the coloured drawing in the present issue of *FLORA*. There is also a portrait in the fine folio work on Himalayan plants by Cathcart and Hooker, though I never saw the flowers so large or of so bright a colour as they are there represented; but this may be the result of different climatic influences.

W. E. GUMBLETON.

Belgrove, Cork.

THE CALIFORNIAN TREE-POPPIES.

IN places where they do well few plants are more beautiful during the summer months than the great Tree-Poppies of Western America. Beautiful at all times in foliage and habit, when the great satin flowers of white and gold, 4 to 6 inches across, hang freely from the tips of every leading shoot, they are as beautiful as anything in the flower-garden. California is rich in plants of the Poppy tribe, from low annuals like the *Eschscholtzias* to these fine shrub-like forms which are peculiar to the region. They include *Romneyas* of two kinds (though for garden purposes the same), *Argemone*, and *Dendromecon*, and

may well be treated as a single group, for a garden which meets the needs of one will suit all alike. But they will not do everywhere, being tender in many places, often difficult of increase, or sensitive to root disturbance, and even when growing well, too often shy in flower. No doubt this is why they are not tried in many gardens where they ought to succeed. Natives of the American Pacific coast, a soil fertile and light, but not too dry in summer, suits them best, for, growing often upon the banks of their native streams, moisture is essential to them, and unless the soil is fairly rich the blooms are few. None the less, fine plants may be seen in gardens so diverse and far apart as to show that with knowledge of their needs there are few places in the southern



TREE POPPY (ROMNEYA).

counties where the Tree-Poppies may not be flowered. In the loams of the eastern counties, upon chalk in the south and south-west, or in the light warm soils of Surrey and the Isle of Wight, they may be grown in perfection when the first difficulties have been overcome.

Romneyas. The common White Tree Poppy (*Romneya Coulteri*) is the largest of its family, save the Oriental Poppy. It is now found in most nurseries, and this is the best way of getting a stock, for cuttings root with difficulty and seed is slow and uncertain, often lying dormant for more than a year. When seed is used it should be sown in pans and not in single pots as so often advised, for pots need such constant watering that the soil becomes rank long before growth begins. The seed may be sown at any time from spring to autumn (but the fresher the better), and should be covered with glass and put in a dark place until the young plants appear, which is often not before the following spring. For the first shift, which needs great care, the best way is to slip a sharp wooden wedge down one side, raising the plant slightly, but leaving it undisturbed at the other side. After a few days the side first disturbed recovers sufficiently to ensure success in moving. The young plants having been wintered under glass and planted out in April or May in a sheltered spot, such as the foot of a wall or a sunny border, the large fragrant flowers, nearly 6 inches across and of finely waved petals, appear from the end of June until October, or even later in a fine season, lasting longer than others

of the Poppy tribe and keeping several days in water. Young plants are 3 or 4 feet high, but strong old bushes often reach more than double this, spreading on all sides also by suckers. The plant risks less from frost than from the spade, and should take its chance when protected at the root by ashes, cocoa-fibre, pine-needles, or other porous litter, with perhaps a bell-jar raised upon bricks to keep off excessive rain. Protected in this way plants have done well as far north as Cheshire. The shoots are often cut to the ground by frost, and even when this is not the case it is best to shorten them well in order to force new growths from the woody base, as these bear the finest flowers. In moving an established plant it should be cut down awhile beforehand and moved while dormant, but even then loss often follows injury to the tap root; at the same time young plants often grow from stray bits of the old root. In cold districts a plant will do well in a cool house, keeping green through the winter, and flowering freely in a sunny place. Plants should be put under glass in gardens where (though hardy) they fail to bloom well. Some foreign growers have obtained blooms from pot-grown *Romneyas* by leaving them exposed to the first white frosts of autumn, after which the buds opened beautifully under glass. The *Romneya* rarely seeds in this country, but may be raised from root-cuttings or suckers cut well back, and moved with a good ball of earth, but seedlings are best. It needs a dry rich soil and plenty of it, refusing altogether to grow in cold heavy soils, and is best

beneath a wall or in a sheltered corner, with some water in dry weather, without which the flowers are apt to come deformed. In damp seasons it often flowers well, a single plant sometimes showing scores of flowers at a time, but copious hand-watering is against flowering. The second kind, *Romneya trichocalyx*, comes so near the older one as often to pass for it, the main differences being a round hairy bud as against a smooth pointed one in *R. Coulteri*, a weaker and more spreading habit, and more leafy stems. The *Romneya* grows wild over a wide region from California into Mexico, being especially abundant in the wild canyons of the interior, whose sides are often thickly covered with these great bushy plants loaded with enormous flowers.

THE PRICKLY TREE-POPPIES (*Argemone*) are a little group of some half-dozen kinds from California, Mexico, and the warm plains of the Mississippi region, growing upon dry hillsides, and beautiful in leaf and flower. Though perennial in America they do best as annuals in this country, reaching a good size and flowering well in one season; they are therefore suited to gardens in which the perennial Tree-Poppies fail. Their leaves are deeply cut and more or less prickly, grey-green in colour with white veins and spines. Their flowers are 4 inches or more across, in colour white, yellow, orange, or (rarely) purple. The best known kind, *Argemone hispida*, from the south-west of the United States and Mexico, bears beautiful white flowers of 4 or 5 inches in great abundance. This is now regarded as only a form

of *Argemone platyceras*, a robust plant of 3 to 4 feet, with bluish-green leaves thickly spined, and large white flowers showing at times traces of colour deepening to purple. Its commoner form (*A. hispida*) makes a stout bush of 4 or 5 feet, when planted early in rich light soil, with shelter and a sunny aspect. In many gardens it does far better than *Romneya*, if sown early, either in the open during April or when fresh seed can be had in autumn and wintered under glass. The plant is at its best during a sunny autumn, strong plants often bearing a score or more of flowers at once. Other kinds worth growing are: The Mexican Prickly Poppy (*A. Mexicana*), which is very similar but not so tall or of such good habit. Its leaves are less prickly, prettily blotched with white, and the orange or yellow flowers are borne upon very short stalks; *Mexicana albiflora* is a variety of this with larger white flowers; and *A. ochroleuca*, though sometimes classed as a distinct species, is also a form of this species, with flowers of pale yellow. Another pretty kind is the large-flowered Prickly Poppy (*A. grandiflora*), a low branching bush of 2 to 3 feet, with fine Thistle-like leaves and stems and large white flowers clustered upon the leading shoots. These plants will sometimes survive a mild winter in warm gardens of the south, but are best raised afresh each year, sown early in heat and planted from pots, or sown later where they are to grow.

THE YELLOW TREE-POPPY (*Dendromecon rigidum*) grows as a bushy shrub where the dry sandy hills of southern California creep down towards the sea.

Often only a few feet high with many slender branches, it varies a good deal in habit, at times reaching 10 feet, with stems an inch thick. It is a pretty plant with thick oval leaves of grey-green and bright golden flowers 1 to 3 inches across—a little like an Iceland Poppy with a bunch of orange stamens in the centre. The flowers are on short stems and the leaves are nearly stalkless, while in habit and size of flower there is much variation. In this country it is only safe in the sheltered gardens of mild districts, in rich sandy soil, either at the foot of a warm wall or against a projecting boulder in the rock-garden, and it is all the safer if on a gentle slope. It should be planted very firmly and without manure. The first flowers appear at the end of May and continue for a long season when the weather is bright and warm, but in bad years it does not do so well and in many gardens will not thrive in the open even if uninjured by frost. In such cases it might be grown in a cool greenhouse, as when the first plant flowered in the alpine house at Kew. Plants may be raised from cuttings, but though free in flower these are quickly exhausted; seeds are slow to grow but are best in the end. There are two or three local forms of the Yellow Tree-Poppy found upon islands of the Californian coast; those known as *D. Harfordii* and *D. flexile* are of drooping and graceful habit, with larger, ovate, and more glaucous leaves.

Another Californian Poppy, but exceedingly rare even in that country, is *Arctomecon californicum*. Only two or three plants of it have been found, so

that it has never been grown in gardens. It is a low hairy perennial with large white flowers.

WILD AND SINGLE CAMELLIAS.

OUR country, especially the south of England and Ireland, and other parts near the sea, suits the Camellia so well that lovers of rare and beautiful hardy shrubs may even think of the charm of kinds other than the common one. The single kinds of the common Camellia are the most beautiful of all and the easiest to get, and these will be charm enough for most people; but it will, perhaps, take years to give them their true place in our gardens. Yet it ought not to be difficult for nurserymen in favoured districts to grow them well from seeds and pick out the finest single forms; and, in fact, our nurserymen are already offering some of the best. Even where there is doubt as to their flowering they are lovely as evergreens. When we think of the number of other wild kinds it is clear what a beautiful feature these would be, added to many of our gardens, their grace and fragrance being remarkable. The best collection we ever saw was in a garden near Angers, where the climate much resembles that of Britain. Even should severe cold occur in flower time there is a curious quality among Camellias of the branches opening better in water in the house than on the bush. It is not easy to get these rarer kinds, as they are not found in the ordinary nursery; but in establishing them perhaps the safest way would be not to take the open garden as the best position, but to take advantage of the half-

shady places which occur so often in English gardens and in woods near them.

Species of Camellias. In its native country the single form of the common Camellia is abundant in the woods, thriving in the shade of other trees, growing slowly, but often reaching 40 feet in height, with a trunk as thick as a man's body, and, though the trees are rarely without flower, of fine effect when in full beauty during April. These wild flowers seldom open flat, but are more or less cup-shaped till their fall, and perhaps for this reason are less valued for beauty than for the fruits, which are gathered in October and pressed for their oil—in great local demand. Though often seen in southern Europe, fruits are seldom produced in this country save upon wall-grown trees, nor, indeed, is it to the welfare of the plants. They are of the size of a small hard apple, bright shining green, and ribbed like a tomato; when ripe the rind splits open, showing brown seeds like coffee beans when fertile, though frequently only one or two in each shell are fully grown.

After the first double-flowered Camellias were obtained, those with single flowers unfortunately fell out of favour and came to be used mainly as stocks for other varieties, and it is only of recent years (when many of the fine old single kinds have disappeared) that a renewed taste for them has arisen. One of the gains in this return to the love of single

flowers is that it becomes a simple matter to raise plants upon their own roots, the single kinds rooting easily as layers or cuttings, a method of layering being much used in Japan. Though of slower growth at the outset these plants are more lasting than those grafted in nurseries, and beautiful little plants only a foot high may be had covered with flowers. The call for single flowers has also resulted in the spread of old for-



"JUPITER": SINGLE JAPANESE CAMELLIA. (Engraved for "Flora" from a photograph in the Old Nurseries, Cheshunt.)

gotten kinds, such as *C. Sasanqua* and its varieties from Japan.

Culture.

In our island the hardiness of the Camellia varies with local conditions; throughout the south and west, and in sheltered Midland districts as far north as Leicester and Cheshire, and in milder parts of Ireland and even of western Scotland, the Camellia is hardy. Grown against walls their beauty might be enjoyed more widely, particularly

such hardy kinds as *C. Sasanqua* and the late flowering *C. Donckelaari*; the Camellia is so late in making growth that it runs less risk from frost than many other shrubs that are grown against walls. When in the open they should be grouped in sheltered places, often doing best in partial shade. Their dread of chalk is proverbial, otherwise they are not difficult as to soil, the great point in planting being to water constantly until well established.

The other species of Camellia (with which the Tea-bush is now included) are not much grown in gardens, though nearly a score of wild kinds are known. They are all from eastern Asia, extending from India to Japan, and south into Malacca, and are plants of the hills rather than the plain. The following have figured in British gardens, but the less showy kinds have passed out of cultivation:—

HIMALAYAN CAMELLIA (*C. drupifera*).—A shrub or low tree found upon hills of eastern Asia from the Himalayas into China. It comes very near *C. Sasanqua*; its solitary white flowers, $1\frac{1}{2}$ inches across, are smaller and less showy; its leaves have a strong smell of tea but not much of its flavour.

HAIRY CAMELLIA (*C. euryoides*).—A low bushy shrub of 6 to 8 feet, found upon the mountains in Formosa and parts of China, more curious than beautiful and much used by the Chinese as a stock for better kinds. It is the smallest of known kinds, with small pointed leaves, toothed, and covered beneath with silky hairs; white cup-shaped flowers, half-an-inch across, borne from May to July. Brought to this country in 1822 as a stock for grafted kinds, it was never in general demand and soon passed out of cultivation.

THE HONGKONG CAMELLIA (*C. hongkongensis*).—A tall kind found only in one district, and so rare that at one time only three trees were said to exist. A small plant is now at Kew,

but so far has not flowered. It is the largest of the group, with broad shining leaves like a Cherry Laurel and rosy flowers 3 inches across.

THE COMMON CAMELLIA (*C. japonica*).—Though some 1,500 hybrids and garden varieties of this species have been known, the kinds that mostly interest now are the single ones with their bold clusters of yellow stamens. These are pretty, not too large, and free from the stiffness of the double kinds. They are found now in several colours, of which *Gauntlett's White* and *Takayama*—of rich crimson-scarlet—are good examples; fine semi-double kinds are *Donckelaari* and *ochroleuca*, and Mr. Sander of St. Alban's has got some very fine kinds. Though less variable in leaf there are several distinct forms, such as the Myrtle-leaved Camellia, with small and narrow leaves and slender growth; *variegata*, with leaves finely blotched and mottled flowers of white and crimson; and *quercifolia*, a rare kind so hardy and early in flower as to be one of the best for outdoors, bearing single flowers and long leaves widening towards the tip in a way unlike any other kind. The best means of increase are cuttings of firm shoots made in early autumn and rooted in pots of peat and sand or pure coarse sand, under frames in gentle heat. Where there are old plants of poor kinds it is easy to renew these by cutting back to near the ground early in January, and grafting the stump some two months later with shoots of the new single or other good kinds; the soil should be kept rather dry meanwhile, with a cool temperature, for if started off too freely the rush of sap prevents union. Trees thus grafted with several scions soon make large plants for cutting. In many parts of Europe the Japanese Camellia is as truly at home as on its native hills, the south of Ireland, the Scilly Isles, and Brittany being examples near home, and the neighbourhood of Oporto, and the Italian Lakes, in southern Europe.

OIL-BEARING CAMELLIA (*C. oleifera*).—A pretty shrub of 10 feet, once not uncommon in gardens but now lost. It is of stout growth with thick pointed leaves, deeply toothed at the edges, and sweet flowers 2 inches across and massed as thick as a snow-drift. Hillsides of Cochin China. A fragrant oil is pressed from its seeds. Some authors regard this as only a variety of *C. Sasanqua*.

LARGE-FLOWERED CAMELLIA (*C. reticulata*).—The finest of all Camellias, with large flowers of soft rich rose, 6 or 7 inches across, the petals beautifully folded into semi-double form. Being difficult of increase it is not a common plant, though one of the best that can be grown in a cool greenhouse; it is of stronger growth and looser habit than other Camellias and easily known by its dull closely-veined leaves instead of the shining leathery leaves of other kinds. The flowers vary a good deal in fulness of petal, some being nearly single with showy golden stamens, and others as nearly full, and both forms often grow on the same bush; young plants of only 2 to 3 feet are free in

habit. Small leaves of deep glossy green and finely toothed, with single flowers of bright rose, $1\frac{1}{2}$ inches across, coming from December to March. It is not often seen in private gardens but flowers regularly in the temperate house at Kew. A double-flowered form of this is known as the Apple-flowered Camellia (var. *maliflora*). China and Japan.

BANKS' CAMELLIA (*C. Sasanqua*).—A charming shrub, common in China and Japan, where its finer forms are much grown and preferred to any other kind. The wild plant bears small single flowers, and always white, but cultivation has produced larger single and double flowers in many shades of colour, even ap-



CAMELLIA SASANQUA: SEMI-DOUBLE FORM.

(Engraved for "Flora" from a plant in the Royal Exotic Nursery, Chelsea.)

flower and beautiful for the conservatory. In the south-west of Britain and Ireland this beautiful tree succeeds in the open, but elsewhere it is tender and sensitive to harsh winds, from which shade and shelter might perhaps save it. Even in Cornwall and Devon it is mostly grown upon walls, though at Scorrier and a few other places there are trees out in the open. Probably the largest of all is one growing at Creg, near Fermoy, co. Cork, which carries a head 60 feet round and is one sheet of flower in its season of beauty.

ROSE-FLOWERED CAMELLIA (*C. rosæflora*).—A shrub coming very near *C. Sasanqua*, but of smaller growth and looser and more straggling

proaching scarlet and red-purple. It grows sometimes as a low bush but oftener as a loose straggling shrub, bearing small leaves of deep glossy green with fine rounded teeth; it flowers in winter, and from growing upon the mountain tops in bleak spots the plant is very hardy. This fact and its loose growth make it well suited to open walls in this country, where in warm aspects it sets its buds freely, flowering from November into the new year. The flowers are beautiful for cutting, and so finely formed that even in the double kinds there is no stiffness, while such is their fragrance that the dried petals are used by the Chinese to scent their teas. This kind is more easily raised from cut-

tings than any, the slender shoots rooting freely in early autumn. It had been nearly lost to gardens, but is now yearly growing in favour. There are several red and white varieties now grown in this country, including a fine double-white form, and one in which the flowers are shaded with rose. Other forms are *semplena*, with white flowers; *anemoniflora*, with white outer petals surrounding a mass of narrower yellow ones; and *variegata*, a plant pretty in leaf, with single pink flowers, but not constant, and often of feeble growth.

THE TEA PLANT (*C. Thea*).—Though grown in but few gardens this exists under many cultivated forms throughout southern Asia, from Persia eastwards, and though China has been its centre of growth the plant is believed to have come originally from India. In this country it exists as a greenhouse evergreen, with dark green leaves and white flowers about 2 inches across and coming first in early winter. Those best known are *Thea Bohea*, the Canton variety, and *Thea viridis*, a much hardier plant from which the best tea is made. *Thea Assamica*, grown in northern India, is again different, taller, larger in leaf, and yielding a pale liquid of distinct flavour. The Tea is a very graceful plant and well worthy of cultivation apart from its commercial uses.

THE CAPE COWSLIPS (*Lachenalia*).

THESE pretty South African bulbs have gradually made their way in gardens by their real beauty and merit, though for many years they were rare and little understood, the plants (like the Freesia and similar bulbs) being often spoiled by too much heat. Not that the *Lachenalia* are new plants in English gardens; some of the best known kinds were introduced many years ago, and must at one time have been widely grown, but they had disappeared so completely that but twenty years since very few were to be found in cultivation. Gradually they have come back to favour, and as their

use has become more general they have proved to be amongst the easiest of bulbs to grow, needing only protection from frost, with air and sunshine whenever possible, in a cool greenhouse, a protected frame, or even a well-lighted window. They flower early in the year, before the multitude of Dutch bulbs, their spikes lasting in beauty for many weeks upon the plants, and for a fortnight when cut, if kept in fresh water and a cool room. Their colours, when well grown, are rich and varied, but pains should be taken to secure a good strain, as plants of one species vary a good deal, and good bulbs soon lose in beauty if badly grown. Though the plants are not easily hurt even by fog, full exposure to all available sunlight ensures good colouring, which often deepens when the flowers have been open for a few days. An added merit is that the whole of the flowers on a spike are in beauty before the lower ones fade, unlike many fine plants which are spoiled by the progressive withering of their blossoms. Given air and sunlight, *Lachenalia* are not particular as to soil, some growers claiming success as complete with a mixture of pure sand and decayed cow manure as with a more carefully prepared compost of loam, manure, sand, and wood-ashes. Any light rich soil seems to suit them, and though it is usual to re-pot the bulbs each year they will do very well for a second or third season if well planted, provided the soil keeps in good condition. It is important to plant early in autumn before growth has commenced—usually some time in August; the pots should then be

buried to the rims in a cold frame in full sunlight, and kept dry or nearly so until root-action begins. They may remain in the open until October, with only a light to keep off heavy rains; afterwards being housed for the winter in a temperature of about 40 degrees, but allowed all the air and sunlight possible. As the flower stems show liquid manure should be given, but the cooler the house temperature the longer their flowers will last. Cape Cowslips are often grown massed in baskets, and very pretty are their crowded spikes hanging in profusion at all angles, contrasting with their rather stiff appearance when in pots; none the less, when densely massed in pans their effect is distinct and striking. After flowering the bulbs should be tended carefully until the leaves turn yellow and shrivel; the pots may then be stood in the full sunshine at the foot of a wall or other dry spot to ripen, water being withheld and sheltered from heavy rain. A few weeks of such complete rest prepares the plants for healthy growth in the autumn.

Lachenalias are increased by means of small bulbs formed around the parent; some kinds such as *tricolor* produce these offsets freely, but in others reproduction is slow. It is not uncommon, when leaves of the more vigorous kinds are broken or damaged, for tiny bulbs to form at the point of injury, and use is sometimes made of this in propagation. Most sorts may be raised from seed, the seedlings flowering in their third season, but this method is little used save for the raising of new varieties. The number of these garden hybrids is now large, in-

cluding kinds of great value for their fine colour, vigour of growth, freedom, and early flowering. By a choice of varieties Lachenalias may be had in flower from December to May, though the time of their greatest beauty is during February and March. From careful culture in rich soils for years past, the present form of many of these plants, with their bold fleshy leaves and bright colour, is very different from that of the wild bulbs, bearing at most two or three small leaves and inferior flowers. The bulbs vary much in size and shape, some being broad and rounded like certain of the Scillas, others slender and elongated. The beauty of the plants depends in no small degree upon the rich colour assumed by the top of the flower-stem with its cluster of sterile buds; in some kinds this is the most brilliant part of the inflorescence. The following species and varieties are admitted by botanists, and nearly all are now grown in gardens:—

L. anguinea.—A rare plant of dwarf habit, with only one broad spotted leaf, some 6 or 7 inches long, and a short crowded spike of whitish bell-shaped flowers upon a darkly spotted stem. April. A kind of small garden value.

L. aurea.—Considered by botanists to be a form of *L. tricolor*.

L. aurea-reflexa.—A garden hybrid between *Ls. tricolor-aurea* and *reflexa*, known also under the name of *Aldborough Beauty*. It is a robust plant, distinct in character, bearing two broad unspotted leaves. The flowers are large, and held sub-erect upon a few-flowered spike, their colour bright yellow slightly tinged with green. April.

L. Cammi.—Another hybrid form, held to be a cross between *Ls. tricolor-aurea* and *pendula*. A pretty kind, early and free in flower and distinct in growth. Its habit is erect, with long leaves of bright shining green, covered with blotches of pale brown which extend to

the flower-stalk and colour the whole of its upper part. The tubular flowers, numbering twenty or more on strong plants, are rather short, of orange-yellow tinged with green at the base, contrasted with bright red in the sterile buds and the top of the scape. A handsome kind flowering in March.

L. Comesii.—A cross between *Ls. reflexa* and *tricolor-quadricolor*, and only differing from *Nelsoni* in the length of the floral segments.

L. contaminata.—One of the oldest but a scarce kind in gardens, with a character for uncertainty in flower. It is variable in form and size, often not more than 2 inches high. Its small crowded flowers, more bell-shaped than tubular, are of dull white, variously shaded with rose or red and with a faint odour of Heliotrope. Its long and narrow leaves are more numerous than in most kinds of Lachenalia, but vary much in length and in density of blotches, which are sometimes quite wanting. Syn. *angustifolia*.

L. fistulosa.—A newly-introduced plant with fragrant tubular white flowers tinged with pale blue at the base, and tipped with purple at the mouth. It is distinct in growth, its two fleshy leaves being nearly as broad as they are long.

L. fragrans.—An old garden plant, flowering late in the season, bearing spikes about 6 inches high of crowded reddish flowers which are strongly fragrant, and but two oblong green leaves. May.

L. glaucina.—A striking but variable plant, changing also a good deal in aspect while in flower. Its flowers are held erect upon a stout mottled stalk, and are short and peculiar in shape, being rounded at the base, narrow in the centre, and again expanding to a reflexed mouth when fully open. Their colour varies from dull white to yellowish-green, sometimes tinged with yellow or red, with a decided green tip at the mouth and a peculiar shade of bluish-green in the sterile buds. The combination of colour is uncommon, and the flowers are pleasantly fragrant. May. A plant of small growth, with two or three leaves, often spotted.

L. isopetala.—A scarce kind, which had disappeared from English gardens until re-introduced in 1884. It blooms in April and May, bearing spikes of pale flowers variously tinged with pale rose or red, deepening towards the

top of the spike. Only two leaves, long and pointed, height 4 to 8 inches. Syn. *rosea* and *bifolia*.

L. lilacina.—A pretty plant, but rare. Its many flowers are of a fine shade of bright lilac, shading to blue, with petals widely spreading towards the mouth of the tube, and carried upon stems densely mottled with reddish-brown. Leaves short and very narrow.

L. Nelsoni.—This fine garden variety is a form of *L. tricolor*, and dealt with as such.

L. nervosa.—A dwarf summer-flowering kind of little interest. Its small bell-shaped flowers appear in short densely-crowded spikes, and are dull white tinged with green and red. Its two spreading leaves are often covered with warty blisters.

L. orchoides.—An old plant long known, and a very variable kind in growth and colour, bearing narrow flowers often less than half an inch long, erect or semi-erect and closely set upon a spotted stem 3 to 9 inches high. They vary in colour from pale white or yellow to deep blue, sometimes tinged with red, fragrant and appearing from March to May. Leaves long and slender, faintly spotted with pale brown or purple. Syn. *mutabilis*.

L. pallida.—A rare species bearing in late spring long densely flowered spikes of tiny erect flowers, little more than one third of an inch long. Their colour is a pale white, tipped with green at the edges of the somewhat urn-shaped tube, sometimes more or less suffused with red, and strongly fragrant. They are carried upon a stout erect stem of 9 to 12 inches of an even green colour, with often twenty-five to thirty flowers in the spike. The long fleshy leaves are held erect and are strongly nerved at their outer edges, of a uniform green above, and dull purple beneath. May. Syn. *odoratissima* and *racemosa*.

L. pendula, and its varieties.—One of the best of the group, a robust grower, and the earliest to flower, its first buds opening in December. Its bulbs are large, increasing freely, while the fleshy mottled leaves of dark green are often a foot long and gracefully curved. The flower-spike is stout and erect, 18 inches high, with its upper part crowded with long horizontally held flowers of bright orange-red and yellow, tipped with green and deep purple at the mouth of the tube, their effect increased

by the bright red of the sterile buds and the top of the scape. As a winter flower it is of great value, and when massed in pans or baskets very effective. It is one of the most difficult kinds to cross, but a few good seedling forms are in cultivation. These are *splendens*, a form due rather to the growth than to other distinctions; *gigantea*, a fine variety in which the flowers are $1\frac{1}{2}$ inches long, held with a decided droop upon a stout arching stem. This is a well-marked kind, differing in colour and habit from its parent, flowering later by several weeks, and increasing far more slowly. A third and handsome variation is *pendula aureliana*, a fine plant of obscure origin. A small cluster of three bulbs was found growing wild in the mountains of the Esterel, near the old Roman road known as the Aurelian Way, and not far from Cannes—a fact inexplicable seeing that all the *Lachenalias* are natives of South Africa. It is difficult to imagine an escape from cultivation in so wild a spot, and equally hard to own it as a native plant, in view of the small number of bulbs found, and that the district has been vainly searched for others. The fact remains that the plant is quite distinct, of even more robust growth and flowering several weeks later than *pendula*; its flowers, rather shorter in the tube, are more numerous, more drooping, held upon longer stalks, and are more widely open at the mouth, while their colour is a brighter shade of reddish-crimson. The plant has been well shown by local growers at the Cannes flower show in March of each year, and always attracts notice. The long arching spikes bear sometimes as many as forty flowers, and minor points of difference are the longer and less fleshy leaves, and its very slow increase by offsets.

L. purpureo-cærulea.—A distinct and pretty plant with erect, bell-shaped flowers of deep, purplish-blue in dense, many-flowered spikes. The leaves, 6 to 8 inches long, are narrow, and covered with blistered markings. April.

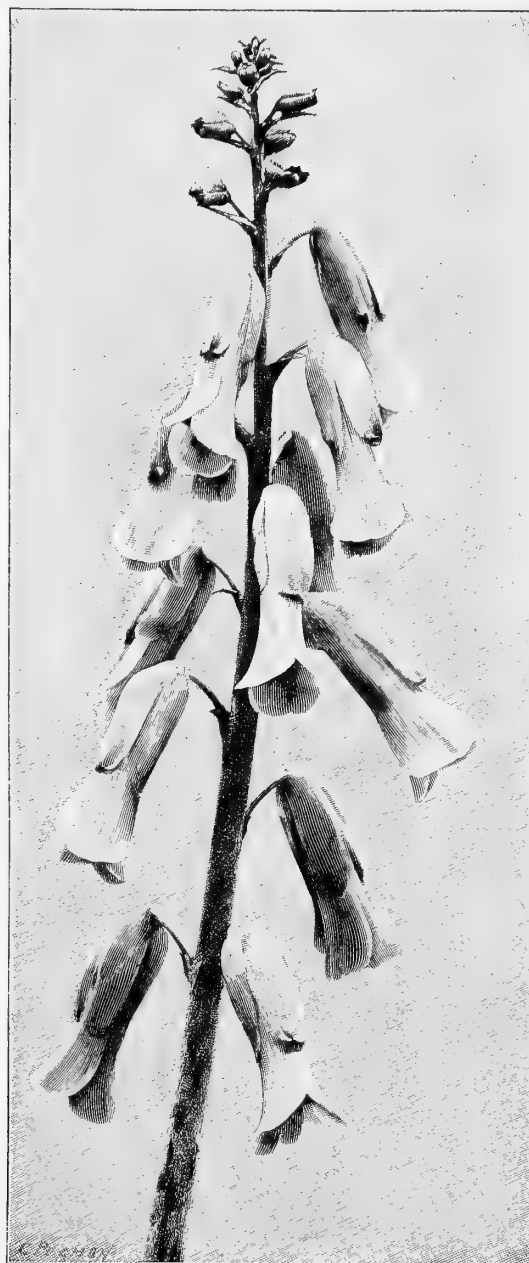
L. pusilla.—A small and inconspicuous plant, bearing a few pale lilac flowers, and small spotted leaves.

L. pustulata.—A vigorous and many-flowered kind, but uncertain in growth and not showy. Its small flowers are more bell-shaped than tubular and borne in compact spikes, about half an inch long, with the white petals shad-

ing to green, and reflexed towards the mouth of the tube. The leaves are covered with wart-like knobs or blisters.

L. quadricolor.—The forms known under this name are considered as varieties of *L. tricolor*.

L. reflexa.—This differs in many points from others of the group, and has been placed



SPIKE OF HYBRID LACHENALIA.
W. E. GUMBLETON.

by botanists in a sub-genus. A dwarf plant and not showy, it bears long yellow flowers of peculiar form, tipped with green and with a shining polished surface. They are held erect upon short stiff stems, the tube swollen in the middle and almost closed at the mouth. The leaves,

produced in pairs, are dark green, deeply channelled and recurved, and strangely thickened towards the apex into a horny tip.

L. Regeliana.—A garden cross between *Ls. reflexa* and *tricolor-aurea*, bearing spreading horizontal flowers of pure yellow with a green spot at the tips of the outer and shorter tube-segments. Leaves glossy green, free from spots.

L. rosea.—A distinct and rare plant, the small flowers of which are bright red and held erect. Leaves smooth, unspotted, and 6 to 9 inches long. May.

L. rubida.—Another kind of marked character, in that it flowers in autumn and that the flowers and leaves appear at the same time, the latter finishing their growth after the flowers have withered. It is a plant of uncertain growth, never free, and often refusing to flower. Its habit is dwarf, with a slender stem thickly spotted, bearing long tubular flowers of bright uniform ruby-red, paler towards the tips, and marked with dark purple and green at the edge of the tube. There are two varieties of this plant: *punctata*, with flowers of a pale colour spotted with deep red, and *tigrina*, or Ware's variety, with flowers shading from bright red at the base to bright yellow in the middle, and thence to green at the tips of the tube.

L. tricolor and its varieties.—Though in name the best known of all the Cape Cowslips, the varieties of this plant are so many and so confused as to make it difficult to fix on the wild form with certainty. That accepted by botanists is a bold free-growing kind, with long leaves of greyish-green faintly blotched with darker patches, and long tubular flowers drooping from slightly arched stems, in which bands of red and yellow merge gradually into green at the mouth, where there is no colour edging. The plant is easily grown and flowered, increasing more freely than most kinds and flowering early in March. In its best forms it is widely grown for greenhouse decoration.

L. tricolor-aurea.—A distinct form of *tricolor*, bearing yellow flowers and differing in habit and in growth, being far more capricious and flowering in general several weeks later. Its leaves are short and rigid, blotched with dull red, which often towards the tip suffuses the whole surface. Flower-stem short and stout, sparingly spotted in its lower part and

reddish higher up, brightening to a fine orange-red towards the tip. A few spreading flowers are crowded upon the top of the stem, their colour a bright yellow shading to green at the ends of the segments. Syn. *lutea*.

L. tricolor-aurea gigantea.—A garden seedling of more robust growth and bolder habit, bearing upon stems of a foot high large flowers of rich orange-yellow.

L. tricolor-luteola.—Differs but little from its parent, save in more slender growth and the pure yellow of its mature flowers, which show but traces of red shading, while the green colour at the mouth of the tube is also less marked. The leaves are often heavily blotched with brown, giving rise to a second name of *maculata*.

L. tricolor Nelsoni.—A fine garden seedling and one of the best kinds for all purposes. It was raised by the late Rev. John Nelson in 1880, and is of free robust growth, with leaves 12 inches long and 2 inches wide, thickly blotched with darker patches. It bears spikes a foot high of drooping flowers, twenty to twenty-five in number and an inch or more long, in colour a bright golden-yellow enhanced by the bright red of the sterile buds and the stem bearing them. This finest of garden forms is regular in flower, blooming early, and a little in advance of *tricolor*.

L. tricolor-quadricolor.—The plant bearing this unhappy name resembles its parent closely in point of habit and appearance, but a little dwarfer and more rigid, and rather less vigorous. Its long leaves are wide and spotted, and the flowers well displayed upon the stem. Its colour differs in the breadth of the greenish band at the mouth of the tube, while the ends of the segments are tipped with crimson-purple or claret. There are two or three minor forms of this variety, the best of which is *superba*, a plant of more slender growth and brighter colour. Its leaves are long and narrow, of a pale greyish-green thickly blotched. The long slender stem is unspotted, and bears its flowers drooping closely; these are longer and narrower than *quadricolor*, richer in colour, with the deep purple at the mouth of the tube strongly marked. This fine variety blooms early, being one of the first to flower. In a second form, *præcox*, this feature is marked, the plant being frequently in beauty by Christmas.

L. tricolor-Warei.—A garden seedling intermediate between *tricolor* and *quadricolor*. It is a pretty plant of dwarfer growth, its flowers showing the same blend of claret-purple, yellow, and red, but in zones of varying width.

L. unifolia.—A little plant of uncertain habits, bearing during March white flowers in dense spikes. It varies in height from a few inches to over a foot, its one narrow leaf bearing blood-coloured blotches.

L. versicolor.—A variable kind of elegant, slender growth, bearing upon its leaves a few blister-like blotches. The tiny bell-shaped flowers vary from green and yellow to pink and purple, and in the best forms are pretty.

L. violacea.—A strong plant of 15 inches high, with long smooth leaves, $1\frac{1}{2}$ inches wide, and spotted. The flowers, coming in March, are in the form of an inflated tube, and their colour white, tinged with violet and green. Syn. *bicolor*.

These form a large and in-

Garden Varieties. creasing list of kinds, between which it is not easy to distinguish in words, many kinds running closely together with only minor differences; raised under artificial conditions these seedlings often seem more at home under glass than the wild plants. The following kinds are becoming common:—*Cawston Gem*, a strong plant with tall mottled stems and many flowers of a fine yellow tipped with purple, paling to pink; *Garnet*, a very early flower of bright yellow broadly edged with dark red or crimson-purple—a little weak in the stem; *Rector of Cawston*, a fine seedling with deep yellow flowers tipped with scarlet; *Ruby*, a combination of crimson, yellow, and green; the first colour has a broad bright edging; and *Topaz*, a strong plant with orange flowers shaded with purple at the mouth. Many other good named Lachenalias have been shown by Mr. Moore of the Dublin Botanic Gardens and other growers—kinds such as *Ruth Lane*, *F. D. Moore*, and *W. E. Gumbleton*, the variety shown in our engraving, but some time must elapse before these come into general cultivation and are fairly tested as to merit. Even where these seedlings show no great advance in form or colour, there is often a distinct gain in size and number of flowers, in habit, and in length of spike.

B.

DAY LILY (*Hemerocallis*).

THOUGH not a large group these are all good and among the best of hardy plants, succeeding one another in beauty through a great part of the season, easily grown, and free from pests. They endure heat, cold, damp, and drought with equal ease, thriving in any soil and charming as large masses in the wild garden or beside water; if used in the rock-garden or border it should be where their free growth will not choke weaker things. The only care should be to dig in plenty of lasting manure when planting the long fleshy roots during autumn or winter, for without this they soon exhaust the ground. For the border it pays to divide and replant every second or third season, but in the wild garden they may be left alone for several years, being strong enough to hold their own with native plants, be they hardy ferns in partial shade or the ranker growths of the water side. The flowers of several sorts are fragrant and good for cutting, fresh buds opening daily upon the long stems to replace those withered the day before. Not only do they flower through several months but the early kinds often start again in a fine autumn and prolong the season; one or two kinds may be grown in pots and forced gently in spring for rooms or the conservatory. When out of flower their foliage is good and in some kinds nearly evergreen or finely striped with white and yellow; these variegated kinds should be in poor soil to bring out their colour. Some differences exist among botanists as to the classing of species and varieties, but the question is of little moment to gardeners

beside that of garden effect, in which there is no uncertainty. We shall therefore not try to decide whether there are six, seven, or more species, but briefly describe those known in gardens.

LARGE-FLOWERED ORANGE DAY LILY (*H. aurantiaca*).—In its wild form this is little known, though a garden variety of it is fast becoming common. It comes nearest to *H. Dumortierii*, but differs in its much larger flowers, longer in the tube, of a deeper red, and borne later in the season; they are of a bright reddish-orange, opening less widely than in other species. It flowered at Kew for the first time in July, 1890, and is handsome in leaf and flower, but not nearly so good as its form *major*, the finest of the group, with bright orange flowers 6 inches or more across, making it one of the most beautiful of hardy plants. It came from Japan as a stray seedling found in a patch of Water Iris, and has proved hardy, a strong grower, free in flower when well rooted, with thick, almost fleshy petals. The flowers are prettily shaded with reddish-brown, particularly on the outside and when in bud, and open from the end of July as clusters of eight to twelve blooms upon branching stems. The leaves are handsome, more than an inch wide, strongly ribbed, and gracefully arched; their colour varies from grey-green to bright and lustrous green. Though slow at the start, this is a charming plant when established, flowering far into the autumn in fine seasons.

PALLID DAY LILY (*H. citrina*).—A new kind from the north of China, with large flowers of clear pale yellow on stout stems. It is still scarce but promises to be a useful plant, larger in leaf and flower than *Hs. fulva* and *Dumortierii*—those nearest to it. So far no varieties are known, but it has already been used in crossing.

DUMORTIER'S DAY LILY (*H. Dumortierii*).—A fine dwarf plant of good colour in contrast to the paler kinds, having flowers of deep orange-yellow shaded with bronze, upon stout stems of about 2 feet; leaves long and tapering. This is the first to flower in May, lasting through June, good for cutting, and the buds prettily shaded with reddish-brown. E. Siberia and N. China to Japan. Akin to *H. minor* but

of stronger growth. The name *H. rutilans* is often used as a synonym, and sometimes for a scarce variety of *H. Dumortierii*, in which the red shading is deepest; there is also a scarce double form. Syn. *H. Sieboldii*.

YELLOW DAY LILY (*H. flava*).—A useful early kind of good colour and one of the best hardy perennials. Its golden trumpet-shaped flowers are so sweet as to earn the name "Yellow Tuberose," and cause it to be much grown for market. It is best massed, the flowers being so short-lived that only in bold tufts is their full effect seen, but when planted in groups beside ponds or streams it spreads into luxuriant masses with scores of flowers open at once. It makes a neat pot-plant for forcing in early spring, the buds expanding in succession for many days, and opening well indoors. For this purpose the roots are best potted in early autumn and plunged in the open till wanted, being forced quite gently the first season; the second year in pots, they will stand more heat. The flower-spikes are seldom above 2 feet, coming in June. Though spread through Europe and Asia the plant varies little; its forms are *cruenta* with deeper-coloured flowers from the south of France; *lutea*, from Switzerland and N. Italy; and *major*, an obscure garden variety claiming greater vigour and freedom.

TAWNY DAY LILY (*H. fulva*).—A plant of strong growth, increasing so fast in some soils as to give trouble, and therefore best in the wild garden, thriving in shade where few other plants would live, and very luxuriant in moist spots with its broad strap-shaped leaves 3 to 4 feet long. The loose clusters of orange-brown flowers are pretty but without smell. **VARIETIES.**—Spread right across Europe and Asia this species has many varieties, including double and variegated forms of great beauty. One of its commonest forms, *disticha*, from Nepaul, differs little save in its smaller flowers, but a variety of this (*disticha fl. pl.*), with large semi-double flowers of orange-yellow shaded with crimson, is very pretty and one of the brightest of the group. This plant is common in the Isle of Wight, often bearing a score of flowers upon one stem with charming effect in contrast with white flowers. *H. Kwanso* is a Japanese form of *fulva*, of rapid growth and double flowers, very hardy, and suited to dry soils. The flowers are very full, with fleshy

petals of bronzy yellow shaded red, carried upon stems of 3 feet or more and lasting longer than those of any other kind. There is also a form of *H. Kwanso* with leaves boldly striped, or nearly pure white, and vigorous for a plant of this nature; the leaves are handsome, but the double flowers lack effect and are often streaky. There is a second and scarce striped variety, *fulva variegata*, with a white stripe down the middle of each leaf; it is good if less robust than the Japanese kind, and better for pots and indoor use. Minor varieties of *H. fulva* are *angustifolia*, from Japanese gardens, with narrow leaves and flowers long in the tube; *crocea*, a colour form from Siberia; and *maculata*, a plant from northern China, with large flowers, but the inner blotches from which it is named are little more pronounced than in other kinds.

MIDDENDORFF'S DAY LILY (*H. Middendorffii*).—A good dwarf kind from the Amur region of Siberia, whence it has made its way to Japan. A scarce plant in gardens where other kinds often do duty for it. The flowers, of deep orange yellow, show a distinctly rounded tube, and are carried in a loose head upon very short stalks. It is broader in leaf and paler in colour than Dumortier's Day Lily, while the flowers are

larger and of deeper colour than in *H. flava*, which it resembles in habit. The flowers are good for cutting, coming early in June upon stems of about 18 inches. A stronger form is grown at Kew as *H. M. major*.



THE YELLOW AND TAWNY DAY LILIES (1. *H. fulva*; 2. *H. flava*).

FINE-LEAVED DAY LILY (*H. minor*).—A pretty little plant, rare in gardens, though one of the oldest Day Lilies. It grows as a neat tuft,

with stems rising well above the foliage, but rarely a foot high in all. Its leaves are of a deeper green than in other kinds with small yellow flowers, tinged with green especially on the outside, and slightly fragrant; pretty for cutting, being well displayed on branching stems. It opens early in June, often flowering again in the autumn. Good as a rock-plant, as less rambling than the bolder sorts, and pleasing in its soft colour. Siberia, N. China, and Japan. Syns. *H. graminea*, *graminifolia*, and *pumila*.

THUNBERG'S DAY LILY (*H. Thunbergii*).—A fine dwarf kind, profuse in flower, and one of the best, but not often found true to name though easily known by the flat, thickened upper part of the flower-stem. It comes very near to *H. flava*, but is dwarfer and more vigorous, blooming much later, with fragrant flowers of a pale sulphur-yellow more open in the throat. It is very useful in succession and for cutting, blooming in July. Japan. Some doubt exists as to the classing of this plant, but most botanists now treat it as a species, though nearly allied to some other kinds.

There are now many seedlings offered by the trade, some of which are good and distinct.

Hybrids. Those best known in this country are *Apricot*, a pretty plant of medium height, with flowers of a warm apricot colour in June; *Aureole*, a Japanese cross of sturdy habit, with distinct flowers of dark orange; *Eastmere*, a hybrid of *flava* and *Dumortierii*; *flavo-Middendorffii*, a cross raised in Germany, with flowers of pale yellow like *flava* in form, but nearer its other parent in leaf and colour; *Flamid*, a new and pretty seedling, useful for its very early flowers of orange-yellow upon long stems; *Frances*, with small flowers of clear yellow; *Gold Dust*, with flowers of bright yellow during June. *Luteola*, a seedling of Messrs. Wallace, of Colchester, is a plant of great vigour and beauty of flower; these come freely upon tall branched stems, and as large as in *aurantiaca major*—one of its parents. *Orangeman* is a dwarf plant of slender growth and clear orange flowers through June and July; *Dr. Regel*, a late kind, rich in colour, lasting well into autumn; and *Sovereign*, with large flowers of soft chrome yellow in July, their petals broad and prettily bronzed on the outside. B.

CALCEOLARIAS, WITH PLATE OF CALCEOLARIA PLANTAGINEA.*

SOMEWHAT out of fashion in our day, these distinct plants have good qualities for gardens, in which the hardier sorts are seldom seen well placed. Many as have been the kinds introduced, it is fair to suppose that, in the vast stretch of country from which they come, there are beautiful Slipperworts still unknown to us. In common with so many plants of the Andes, the Calceolarias mostly thrive better in the north and north-west of Britain than in other parts, and hence we find the Plantain Slipperwort (*C. plantaginea*) described as flourishing in Scotland some forty years ago, having come from Chili as long ago as 1826. From our plate, painted at Warley in Essex, it is plainly possible to grow such plants well in the south, spite of the drier heat of summer and the "mugginess" of winter, which are most against them. Of the plant itself our portrait is the best description, its smooth, tufted leaves suggesting the wild Plantain after which it is named. Suffering mostly from damp in winter, it should be planted on raised slopes of the rock-garden and its lower leaves kept from touching the soil by flat, porous stones; as they die away in winter (the plant being then leafless) it is well to remove them, to prevent that damp decay which is the worst enemy of the dormant crowns. With these aids it becomes a useful rock-plant, quite hardy at the root, even in the sharp winters of North Britain. When starting again in spring old plants need careful watching for slugs, which eat away the

* From a drawing by H. G. Moon at Warley Place, Essex.



Androsace
Androsace

young shoots as they grow, causing loss. The flowers appear in June, sometimes pure yellow and at others prettily spotted with reddish points beneath. Amongst Calceolarias it is one of the easiest to grow and both quaint and pretty in its effect when grouped in the border or among rocks; flowering so soon in the year, young plants should be put out early—even if protected for awhile—to enable them to get a hold before hot weather. Several hybrids have been raised between this and allied kinds, of which the best is *C. Kellyana*—a useful and pretty plant, described on a succeeding page.

The Calceolarias or Slipperworts are a large and handsome group of about 120 species, almost confined to the high valleys of western South America, and unlike all other plants in their pouch-like flowers. It is with a strange mixture of feelings that one turns to the records of forty years ago, when these plants were in full favour, the centre of interest at shows, the mainstay of the summer garden, and the special pride of florists. And to-day, after so many years of care and favour, the genus is forgotten save for the few shrubby kinds retained for borders and the race of tender greenhouse plants whose flowers—more monstrous than beautiful—appear during a few short weeks each spring. True there are yet a few of the wild kinds lingering on in old gardens, too robust to be easily killed by neglect, and witnessing mutely to the fickleness of man and the real beauty of some of these lost plants of other days.

The range of the Calceolaria nearly

coincides with that of the Fuchsia, reaching from Mexico to the extreme of South America and thence to the Falkland Islands and New Zealand. Over a great part of this area they grow in the high valleys of the western Andes to an extreme height of 13,000 to 14,000 feet, thriving in the sandy waste of volcanic rocks or the richer soils beside streams, and in a moist climate neither hot nor cold. A few occur in the drier parts of Chili and Peru, four species in the heights of Mexico and central America, and a little group of alpine kinds in the wind-swept Falkland Islands. These conditions of growth explain the failure of many kinds near towns or in districts unsuited to them as to soil and climate, the moister air of Scotland, Ireland, and the west of England meeting the needs of most better than that of other parts. Among them are woody shrubs, perennials, and annuals, with a great variety of form, foliage, and flower. A few shrubby kinds are hardy the year round in gardens of the south-west of England and Ireland, and some of the perennial species in gardens of light soil will thrive much further north, but in the main they need just enough shelter in winter to keep out frost. In southern gardens they do best (during summer) in a north aspect such as the shady side of a hedge, yielding a fine display in the autumn and (in many kinds) flowering under glass through a great part of the winter, if free from fog and damp. In a few sorts old plants do well through a series of years, but it is best to renew most kinds frequently from seeds or cuttings, using the old stock for

planting out. Being in favour while the "bedding" craze was at its height the *Calceolarias* never had a fair trial in ways that would have given better results, for success often comes with a careful choice of ground, not easy to secure when planting to line. The effect of the larger kinds massed against a screen of Yew or Holly is very beautiful, while the clear yellows are striking in contrast with the blue of *Salvia patens*, or colonies of Cornflower; but a skilful gardener will find endless ways of using the plants to purpose, set here and there to follow their own ways in the moist and sheltered corners best suited to their varying needs. If the soil is not too rich their growth is sturdier, more wiry, and less subject to disease.

Calceolaria adscendens.—A sub-shrubby species with slender reddish stems, small rough leaves, sharply toothed, and yellow flowers. Formerly much used in bedding. Chili. Syn. *C. rugosa*.

C. alba.—A beautiful and distinct shrub of neat habit, with long slender stems, narrow grey leaves of 3 to 4 inches, and clusters of white flowers. It is rare even in Chili, first brought here in 1844, then lost, and reintroduced a few years since. Not being a robust plant it is safest in a cool house, but has done well at Kew and other places in the south, planted beneath a warm wall and even passing a mild winter in the open air. It grows about 3 feet and is loaded with flowers from August into October; under glass it is pretty in pots or baskets.

C. amplexicaulis.—A handsome plant and one still grown for its vigour and beauty. It is of stout growth, with soft leaves of dark green encircling the stem, and heavy clusters of pale yellow flowers. Large old plants of this kind are useful as standing more heat and drought than other kinds, and free from disease. It is one of the best for planting out, whether grouped or left to ramble near walls, and its flowers are renewed from suckers till far into

autumn. Peru and Ecuador. A variety, *Albescent*, bears paler flowers approaching white. A kind coming very near this is *C. crenata*; its leaves are a little rounder, with flowers of a paler yellow.

C. andina.—A rare shrubby kind from Chili, pretty even when quite small and with a long season of beauty. Its leaves are small, thick, and hairy, carried upon slender stems, with many heads of yellow flowers during summer.

C. arachnoidea.—A distinct kind which in crossing has influenced the race of garden hybrids. Its large leaves are clothed with whitish down; flowers of rich purple, crumpled and irregular in outline. Brought from the high valleys of Chili, where it grows in hard gravel soil and is valued for a crimson dye, brilliant and enduring, obtained from its roots and used for woollen fabrics. Syn. *C. tinctoria*. There is a variety *alba* with white flowers.

C. bellidifolia.—A hardy perennial species varying much in form and height, from stems of a few inches to over a foot high. A graceful plant of slender growth, with tufted leaves like a Daisy, and large yellow and red flowers with a big lower lip. High mountains of Chili.

C. bicolor.—A low shrub of trailing habit, branching freely, distinct in colour, its long shoots bearing roughly toothed leaves of 2 to 3 inches and long loose clusters of white and yellow flowers, of medium size and peculiar shape, the lower lip curling right over the tiny upper one. Should be grown freely during summer and potted up for winter use under glass; also grown as a pillar plant. Rarely becomes diseased. Peru.

C. Burbidgei.—A good greenhouse kind, vigorous and constant in its winter bloom. It was raised some twenty-five years ago as a cross between *C. fuchsiae-folia* and the robust *C. Pavonii*, and named after its raiser. It is hardier than its parents, living for many years and forming strong woody shoots of 6 to 8 feet, while planted in the greenhouse as a pillar plant it sometimes grows 15 feet. It needs room and is ungainly in small houses; it flowers from August far into the winter and is evergreen, with hoary leaves in pairs and large flowers of rich yellow upon stems so stout as to stand without stakes, spite of their length. New shoots constantly rise from the base to replace those that have flowered. When confined it

needs large pots and rich soil, but is best planted out where room can be spared.

C. chelidonioides.—An annual of 1 to 3 feet, neat in habit, with pretty pale yellow flowers, thriving in moist, shady places beside water, and naturalised in some of the warmer parts of Britain, sowing itself freely. Does well in full sunlight. Ecuador and Peru.

C. corymbosa.—One of the herbaceous sorts used in crossing, its influence being seen in the broad leaves, robust habit, and large yellow flowers of many garden hybrids. It is the commonest kind in Chili, with a wide range and variable form, the large oblong flowers of bright yellow being much inflated, with a large gap in the lower lip and often shaded within by reddish veins. Chili.

C. crenatiflora.—A robust herbaceous plant much used in crossing, giving to certain strains their spotted flowers with long hanging pouches. Ample leaves and flowers in large clusters with a tiny upper lip and the large lower one notched, crumpled, and dotted with red. It is a showy kind, doing well outside in summer in moist but sunny spots. Chili and Isle of Chiloe, in damp ground beside water. Syn. *C. pendula*. *C. glandulosa* comes near this but has smaller flowers of white or pale yellow.

C. Darwini.—A rare and handsome species coming near *C. Fothergillii*, but with flowers twice its size.

C. dentata.—A shrubby species akin to *C. adscendens*, but longer in leaf and with larger and more abundant flowers. This kind is one parent of the shrubby border kinds used for summer bedding. Chili. Syn. *C. chilensis*.

C. flexuosa.—A fine sub-shrub with a woody stock and stems, slender and a little weak, with thin rounded leaves of 3 to 4 inches and coarsely toothed, and heavy clusters of large rounded flowers of golden yellow, with a yellowish calyx. Peru. A handsome pillar plant for the greenhouse and one of the best shrubby kinds for the summer garden.

C. Fothergillii.—A very old plant, brought from the Falkland Islands in 1777, and several times reintroduced; probably not now in cultivation, for though beautiful and hardy it is not easily grown. It is the best known of the alpine kinds from Patagonia, growing as a low tufted herb with hairy spoon-shaped leaves and short slender stems bearing each a single flower.

These appear about May and vary, but are mostly a blend of yellow and purplish-brown, the upper lip reduced to a tiny disk and the lower about an inch wide and very open. To do well it needs to be studied as to soil and climate, doing best in partial shade with its roots packed between chalk stones. In watering it is important not to damp the leaves. Crossed with other species this has given several hybrids rather less delicate.

C. fuchsiaefolia.—A stout woody shrub of 2 to 4 feet, like a Fuchsia in leaf and habit, with glossy leaves pale beneath, and rich yellow flowers freely carried during the winter. It does not thrive everywhere so well as in Scotland, where it is valued for winter effect. To secure this it should be grown freely during summer in cool, shady places (its leaves being sensitive to sunlight), and housed early in September, flowering from October throughout the winter if only it can be kept from fog—to which it is most sensitive. One of the hardiest kinds where it succeeds, it does well in rooms or the border, and though it can bear only the mildest of southern winters in the open, it needs only bare protection from frost. Peru. Syn. *C. deflexa*. Nearly allied kinds are *Cs. cerasifolia*, *padifolia*, and *tetragona*.

C. Henrici.—A handsome shrubby evergreen from the Andes of Cuenca in Ecuador, of long Willow-like leaves and rounded flowers of deep yellow, with a large upper lip.

C. hyssopifolia.—A leafy shrub of erect habit, with slender stems and narrow down-covered leaves; flowers of clear pale yellow, in shape like the garden hybrids, but smaller. One of the best kinds for warm gardens during summer. Andes of Quito, at from 9,000 to 13,000 feet. Nearly allied to this are *Cs. Hartwegii*, *lavan-dulæfolia*, *rosmarinifolia*, and *gossypina*—plants of Ecuador and New Granada.

C. integrifolia.—The source of the shrubby border Calceolaria, a plant common in Chili and very variable. The leaf is mostly broad and Sage-like, toothed, whitish below, and often gummy, but there are also narrow-leaved forms. The flowers also vary much in size and colour, but are mostly lemon-yellow, with lips unequal in size and closely compressed. The plant known as *C. rugosa* is a form of this, with flowers of deep yellow and leaves covered beneath with rusty down.

C. Kellyana.—A very pretty rock-plant raised as a cross between *Cs. plantaginea* and *Fothergillii*, and only differing from the last in shape of leaf and its longer flowers upon which the markings are smaller and thicker. It is a rare plant, easily grown in Scotland but more difficult towards the south. Its form resembles the *Mimulus*, closely hugging the ground, with oval leaves covered by soft white hairs; the slipper-shaped flowers of deep yellow, closely spotted with brown, appear from June to September in heads of only two or three flowers. Increased by cuttings or division. Though sometimes injured in sharp winters, it is hardy, thriving in a moist crevice of the rock-garden in stiffish loam mixed with a little peat. One of the best and most easily grown of border kinds.

C. lobata.—A distinct kind from the mountains of Peru, where it grows as a hairy trailing herb with long-stalked roundish leaves and flowers of clear yellow, spotted with red inside; the upper lip small and the lower large, swollen, and recurved. Useful under glass during winter, flowering freely in baskets or trailing from the stages.

C. mexicana.—A robust annual from a great height in the mountains of Mexico and Guatemala. Its mass of golden flowers and bold foliage may be used for lighting up odd corners, where it will often re-sow itself. *Cs. gracilis* of Ecuador, and *tenuis* of Chili, are allied species.

C. nana.—A miniature of *C. Fothergillii* from the same region, but only 2 to 3 inches high.

C. pardanthera.—A scarce hybrid raised between *Cs. Fothergillii* and *thyrsiflora*, with open yellow flowers blotched with brownish-purple and very handsome.

C. Pavonii.—The best of the herbaceous *Calceolarias*, with stout stem of 3 to 4 feet, covered with clammy hairs, and large much-toothed triangular leaves upon stems broadly winged to the base. Showy yellow flowers in large spreading spikes from autumn into winter, when they are very useful under glass. In the open a shady corner against a north-west wall suits it best, the roots being lifted or covered in winter. There is a group of allied kinds including *tomentosa*, a very woolly plant; *calycina*, with flowers bunched like a *Geranium*;

perfoliata, with smaller flowers and a different leaf-outline; and *dilatata*, a slender kind from Ecuador, smaller in leaf and flower.

C. petiolaris.—A tall bushy annual of 3 to 4 feet, with large coarse leaves clasping the stem and an abundance of yellow flowers in loose clusters. The flowers are too small to be effective, and composed of lips nearly equal and closely compressed. Ecuador. Syn. *C. floribunda* and *connata*.

C. pinnata.—A slender annual of rather weedy growth, with finely cut leaves and pallid yellow flowers. It was the first *Calceolaria* grown in gardens, coming from Peru in 1773, but is hardly worth growing. Naturalised in India and other warm climates.

C. pisacomensis.—A distinct plant of tall growth, with rough, deeply-toothed leaves rolled at the edges, and heavy clusters of orange-red flowers, of which only the lower lip is seen. Peru.

C. polifolia.—An erect shrub with small whitish leaves and heads of scanty yellow flowers, too small for effect. Chili. Several other kinds belong to this group, but none are of value.

C. punctata.—A shrubby plant with oval, doubly-toothed leaves and helmet-shaped flowers of white, spotted lilac. A common Chilean plant, unpleasant in smell. One form bears lilac flowers spotted with yellow inside the lower lip.

C. purpurea.—An erect herb of 12 to 18 inches, with rough coarsely-toothed leaves, covered with gum, and large loose clusters of small purplish flowers, the upper lip of which closes lid-like over the lower. Chili. 1826. A pretty form of this, *picta*, bears white flowers with a band of bright purple shading around the gap of the lower lip.

C. racemosa.—A plant near *C. corymbosa* but not so good. Patagonia. Syn. *C. Herbertiana*.

C. salicifolia.—A neat evergreen shrub of 2 feet, with oblong leaves and pouched flowers of lemon-yellow and pure white. A plant of fine habit for walls or pillars, flowering in summer and autumn.

C. sessilis.—A shrubby plant with woolly stems and broad stalkless leaves; flowers deep yellow, with lips tightly compressed. Chili.

C. Sinclairii.—A half-hardy herb from New Zealand, with oblong hairy leaves and

small lilac or pale pink flowers, spotted within and not pouched like most American kinds.

C. scabiosæfolia.—A stout annual of vigorous growth, good in colour during autumn and easy to grow, sowing itself freely in suitable spots. Peru, 1823. A plant useful for cutting, which should be more used in our gardens.

C. suffruticosa.—A seedling raised in France and allied to *C. rugosa* through *C. Triomphe de Versailles*. An erect free-growing shrub of about 3 feet, with woody base and leafy stems, the leaves crisped and waved. The pale yellow flowers appear on tall slender stalks and are



CALCEOLAREA VIOLACEA.

gathered into close rounded heads of ten or a dozen blooms, of distinct and fine appearance.

C. tenella.—A dwarf trailing plant of only a few inches high, spreading as dense green tufts thick-set with tiny Thyme-like leaves. The flowers are borne upon short curved stems springing from the leaf-axils, yellow streaked with crimson within, of pretty effect. A good hardy plant for the rock-garden, found in sandy places and upon damp rocks near the rivers of the Andes at from 4,000 to 5,000 feet.

C. thysiflora.—A low sub-shrub of slender erect growth, with narrow coarsely-toothed leaves of about an inch, and long narrow spikes of small yellow flowers scented like Labur-

num. A common Chilean plant used for dyeing yellow.

C. verticillata.—A trailing plant more curious than pretty, with slender hairy stems and sharply-toothed leaves, bearing narrow spikes of deep yellow flowers in which the upper lip is very small and the lower lip strangely twisted. Lima.

C. violacea.—A very distinct plant, once classed by itself as *Jovellana*, but intermediate forms join it to *Calceolaria*. It is the hardiest of shrubby *Calceolarias*, growing as a shrub of 3 to 4 feet in light soils, blooming in April and May upon shoots of the previous year. Helmet-shaped flowers of lilac-blue spotted with yellow and red within the gaping mouth. S. Chili. *C. triandra* comes near this, with small much-cut leaves and flowers with three stamens—the only case in the genus.

C. viscosissima.—A robust plant with broad leaves, covered thickly with gum in all its parts and bearing tawny flowers. May be used with effect in the summer garden against a background of dark shrubs. Syn. *C. rugosa macrophylla*.

UNDERPLANTING.

IN the present state of our woodlands, when through the decay of the trade in underwood and the neglect of the trees many woods are thin and worn out, "underplanting" is a subject to be thought about. Pines, that in youth might have covered the earth with their branches, have grown and shed most of their boughs, and grass has begun to invade the ground, bringing in its train starvation or death to the trees; while the sun gets in and drying winds complete the ruin of the unsheltered woodland. Now I want to make it clear that this cannot happen when a wood is managed in the best forest way, which never allows the overhead canopy to be broken. A wood invaded by sun and drying winds fast decays. Instances of this may be seen in any woodland district where people

use their eyes; the thin scraggy plantations common in Britain beside roads and fields, all show the evil. They are far more open to the attacks of sun and drying winds than such broad, natural woodland as occurs in the best planted counties and estates. The remedy for the stale woodland is "underplanting." That means, when woods get thin or scraggy from any cause, the introducing of young trees, usually of different kinds from the existing trees, and that will stand partial shade—what are called shadebearers. When planting in treeless ground we have none of these questions to consider, but for replanting old woodland we can only choose those trees which will thrive in partial shade; and as in old woodland it is more difficult to protect young trees from rabbits, we must if we can, choose those that are not so loved of that pest. Where the nakedness of the wood occurs in large patches we can plant them and wire, but in large woodland areas we must plant the young trees singly among the older trees, and hence the necessity for choosing kinds that will thrive in partial shade. Among the summer-leafing trees the best for underplanting is the Beech, of which in certain forests of the north of Europe trees of 50 to 60 feet may be seen thriving under Pines nearly 100 feet high, and both close set. Inter-action of the roots of trees of different kinds is rather beneficial than otherwise. After the Beech may be named the Hornbeam, Oak, Ash, and on sandy or rocky soils, the Chestnut. (By this name I do not mean the Horse Chestnut—which is not a Chestnut at all.) Most of the trees

named—except the Ash—are not very liable to the attacks of rabbits, and they also bear planting as saplings of 6 to 8 feet or even more, though beyond that size it is risky. In all cases we must avoid trees too old for transplanting. We cannot with success plant Pines of large size, but with a little care in buying from forest nurseries we can get tall saplings of the summer-leafing trees that will grow well.

Among Firs the best for underplanting is the Silver Fir, which may often be seen in the German forests growing well under the other trees, all closely set. Spruce, in wet land, is also good; and in our southern and western country the Douglas Fir is excellent and soon gets its head up among the other trees, the shelter of which is a help to it at first.

The effects of underplanting in the best cases are good. I have often seen woods treated in this way very beautiful, varied, and full of life; but to enjoy such woods there should be well-considered rides made through them, airy and accessible in all weathers.

THE DEAN OF ROCHESTER.

DEAN HOLE, the first writer of our time upon gardening, closed his long and happy life on the 25th August. Large-hearted, humorous, and of fine presence, he was a country gentleman of the best sort and endeared to many garden lovers by his writings upon their favourite theme. Many years ago these first appeared in the old *Florist and Pomologist*. I well remember reading them, among the platitudinous "calendar of opera-

tions" of the usual sort with something of the feeling with which one might find alpine flowers on cinder heaps. The Very Rev. Samuel Reynolds Hole, D.D., was the son of the late Mr. Samuel Hole of Cauntun Manor, Notts., where he was born in December 1819. Educated at Newark Grammar School, he went thence to Brazenose College, Oxford, where he graduated in 1844. He at once submitted himself for deacon's orders to the Bishop of Lincoln—then the diocesan of Nottinghamshire—and undertook the curacy of his ancestral parish of Cauntun, where he worked for forty-three years. He became vicar of the parish in 1850 and was a parish priest of the best sort, knowing the needs of his people, especially the working men. As squire of Cauntun, to which he succeeded upon his father's death in 1868, he had some scope for field sports, but this never involved any neglect of his higher work. The story of his life as a churchman has been so fully set forth in the daily papers that we need only speak of his relations to the garden and to rural life. His first book was "A Little Tour in Ireland," illustrated by John Leech, and through Leech he became the friend of both Thackeray and Charles Dickens. In 1869 he brought out his "Book about Roses," which has passed through many editions, and of his other works may be men-

tioned "Hints to Preachers," "Nice and her Neighbours," "A Book about the Garden," and two volumes of "Memories," one in 1892 and the other in 1894. Brought up as he was in a Nottinghamshire manor, he was much attached to rural life. He was taught to ride when little more than four years old, and he always maintained that his influence with his parishioners was in nowise diminished because he hunted once a week with the Rufford. He will long be remembered among humour-loving divines, for his stock of jokes was an ample one and he was very



Samuel Reynolds Hole

happy in his way of telling them. His humour was at its best when acting as chairman at a public dinner. As chairman Charles Dickens was very amusing, and the late Lord Salisbury impressive, but Dean Hole had all their good qualities to which was added a charming humour. Our portrait is one done in his mature life; of recent years the once grand physique was sadly weakened. He lies buried in the graveyard at Cauntton, near the manor, where most of his days were passed. W. R.

BEAUTY, NOT SIZE.—Not only those broad and striking effects which belong to a great range of field and wood, or to bold scenery, come within the domain of landscape art, but those lesser and ordinary graces that may be compassed within stone's throw of a man's door. We do not measure an artist by the width of his canvas. The panoramas that take in mountains are well if the life and the mist of the mountains are in them, but they do not blind us to the merit of a cabinet gem. I question very much if that subtle apprehension of the finer beauties which may be made to appear about a given locality does not express itself more pointedly and winningly in the management of a three or five-acre lawn than upon such reach of meadow and upland as bounds the view. The watchful care for a single hoary boulder that lifts its seared and lichened hulk out of a sweet level of greensward; the audacious protection of some wild vine flinging its tendrils carelessly over a bit of wall, girt with a savage head-growth—these are indications of an artist feeling that will be riotous of its wealth upon a bare acre of ground. Nay, I do not know but I have seen about a labourer's cottage in Devonshire such adroit adjustment of a few flowering plants upon a window-shelf, and such tender and judicious care for the little matlet of turf around which the gravel path swept to his door, as showed as keen and artistic sense of the beauties of nature, and of the way in which they may be enchained for human gratification, as could be set forth in a park of a thousand acres.—D. G. MITCHELL.

THE LADY BIRCH.—Up here, where no hammer has resounded for generations, Dame Nature has worked with deft and patient fingers, weaving her slow tapestries of fern and lichen on the tumbled boulders at the base, and throwing up from many an inaccessible cleft and cranny the sturdy slightness of the Lady Birch. Sufficient unto itself, requiring neither shade nor sustenance from other trees, rooted apparently in nothingness, yet gathering into its silvery bark a strength and steadfastness that defies the ravages of time, this maidenhair among trees makes lovely at all seasons of the year our no-man's land at the edge of the forest, and responds to the brisk salutations of the west wind with a shower of drooping gold, and music that might have served Oberon in fairyland.—M. R. J.

SONGS OF THE WOODS AND FLOWERS : A VISION.

I DREAMED that, as I wandered by the way,
Bare winter suddenly was changed to spring,
And gentle odours led my steps astray,
Mixed with a sound of waters murmuring
Along a shelving bank of turf, which lay
Under a copse, and hardly dared to fling
Its green arms round the bosom of the stream,
But kissed it and then fled, as thou mightest in dream.

There grew pied wind-flowers and violets,
Daisies, those pearled Arcturi of the earth,
The constellated flower that never sets;
Faint oxlips; tender bluebells, at whose birth
The sod scarce heaved; and that tall flower that wets
Its mother's face with heaven-collected tears,
When the low wind, its playmate's voice, it hears.

And in the warm hedge grew lush eglantine,
Green cowbind and the moonlight-coloured May,
And cherry-blossoms, and white cups, whose wine
Was the bright dew yet drained not by the day;
And wild roses, and ivy serpentine,
With its dark buds and leaves, wandering astray;
And flowers azure, black, and streaked with gold,
Fairer than any wakened eyes behold.

And nearer to the river's trembling edge
There grew broad flag-flowers, purple pranked with white,
And starry river-buds among the sedge,
And floating water-lilies, broad and bright,
Which lit the oak that overhung the edge
With moonlight beams of their own watery light;
And bulrushes, and reeds of such deep green
As soothed the dazzled eye with sober sheen.

Methought that of these visionary flowers
I made a nosegay, bound in such a way
That the same hues, which in their natural bowers
Were mingled or opposed, the like array
Kept these imprisoned children of the Hours
Within my hand,—and then, elate and gay,
I hastened to the spot whence I had come,
That I might there present it!—Oh! to whom?

—SHELLEY.

FLORA

AND SYLVA.

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NOVEMBER, 1904.

[Monthly.

THE GARDEN BEAUTIFUL. HOME LANDSCAPE AND HOME WOODS. TREES BY WATER.

IN most of the talk about garden design of recent years, the right planting of the country place is overlooked, and even those who care most for good planting are apt to neglect the waterside, and we see vast stretches of shoreland without any of the lovely effects which well-chosen riverside trees give. Some things come of themselves, such as Osier and Withy; but they have rarely any good effect, form, or colour. Often beautiful views are shut out by these weedy things, and where the house is not in a commanding position they may do infinite harm. One of the most beautiful of situations for a house is upon a bluff beside a river, as at Nuneham; and even if there is no bluff, as at Levens, the river may be a great aid in fine planting, and careful thought should be given to what gives much beauty at trifling cost. The best waterside materials are often those of our own country and easily procured, fine in colour, and good in form. There are certain gains in waterside planting which we do not often find elsewhere; we get air, and light, shade and breadth from the water itself, which prevents the

dotting of plants over the whole area which is too common a result. Again there is often good land beside rivers liable to flood, which we cannot plant and happily cannot wisely build upon, and these give us those rich levels that are such a gain in breadth to lowland landscape when fringed by noble planting. Flooding is in no way against the trees themselves if planted rightly upon islands, lake margins, and riversides. Some of the best trees, like the Willows, are used to floods, and even trees that we more often associate with hot, dry soils—like the Eastern Plane—seem happy in such conditions, as we may see upon the waterside in the Thames valley. As it is important to fix upon the trees which give us fine form and colour beside water, we omit in these notes the many shrubs and herbaceous plants which also yield good effect in lowland.

Of all sites for planting there are none in which we have clearer guidance as to what is best than we have for islands and the margins of water, be it lake or river. The vegetation should be mostly of a spiry character; Willows in many forms, often beautiful in colour both in summer and winter, with Dogwoods and Poplars. Even the Willows of Europe

and Britain are ample to give fine effects, and some form tall timber trees like the White Willow. There is also a superb group of weeping trees among these Willows, some of them more precious and hardy than the Babylonian Willow. This is worth bearing in mind when seeking good and artistic effects. Take, for example, a piece of water, good in form of margin and right in every way in relation to the landscape; it is quite easy to spoil the effect of it all by the use of trees which have not the form or colour characteristic of the waterside. By the right use of trees fitted to the soil we may, on the other hand, make the scene beautiful in delicate colour and fine form; in a word, right at all seasons whether as a picture, as covert, and even for timber, for some of the Willows have a high value as timber.

The best trees for waterside planting are those of our own country, or of Europe and the northern world generally; though we need not refuse things that come to us from other countries. People are so much misled by showy descriptions in catalogues, and also by their own blindness to ugly things, that we often see misuse beside the water of variegated trees and shrubs like the Yellow Elder, the Purple Beech, and other things of the worst kind for such a place.

*Tree Willows
for Effect.*

There are many Willows, but for good effect the best are the "Tree-Willows"—those which may be had on their natural roots, and of some timber value. The best of these for our country is the White Willow, lovely at all times, but especially on days of wind and storm

when other things are often at their worst. The best planting I ever did was of a bundle of White Willows on an ugly bank made without thought across a pond; the effect obtained is excellent, and even the stiff bank is lost to view. The hybrids of the White Willow (Bedford Willow) are good also, and next best for colour is the Yellow Willow (*Salix vitellina*)—classed by botanists as a variety of the White Willow—but for planters distinct in stature, form, and colour. It is often seen beside northern and Irish rivers, but when massed in a marsh or bog, or beside a wide river, it is fine in effect and the best of all in wintry days. The Red Willow (Cardinal Willow) is a form of it, with the same shape and even brighter colour. The Crack Willow (*S. fragilis*) is not so good in colour but is very picturesque in form upon river banks, and quite worthy of a place among the Tree-Willows. The new weeping form of the Yellow Willow (*S. vitellina pendula*) is beautiful, but the desire to increase it quickly has led to grafting in nurseries, which means death, and ugliness in dying. To strike root as freely as a Willow is a proverb, yet men will graft them where the result is certain failure. There is not only the loss of a beautiful tree, but the stock upon which it is grafted—usually the Osier (*S. viminalis*)—comes up instead, like a tree-weed to obscure the view, and very difficult to get rid of. Many beautiful Willows of a rarer kind than the Tree-Willows here named have been raised, but the few who plant lose them through grafting on the Osier.

After Willows, the Poplars come in

best in all northern countries. The White Poplar is beautiful in colour as a river-side tree, and superb in form when well grown. The supposed pyramidal variety of it is not so good or so lasting. The Green Poplars of the French rivers are also beautiful, though none are quite so pretty as the common Aspen. The Lombardy Poplar is sometimes very fine in valleys near water, but is apt to sicken. The Grey Poplar comes next to the White in beauty, and the Black Poplar is often grand beside water.

Some of the American marsh trees are very pretty near water, in particular the one called the Tupelo, of which there is a fine tree at Strathfieldsaye, lovely in colour in autumn; but the summer leafing trees of the American woods have been much neglected since the vogue for planting Conifers came in, so that we can point to few examples of good results in our country.

The Western Arborvitæ and the Hemlock Spruce thrive in wet ground, as does the Norway Spruce and the Sitka Spruce. We resort to trees of the Pine tribe to clothe sandy or stony hills, but it is as well to know that we are not obliged to confine ourselves to Willows, Alders, and Poplars, on low and wet land, if for any reason we prefer evergreen trees. In southern parts of Britain where (after its first youth is past) the Norway Spruce is often a failure, it will yet grow well trees beside streams and in wet bottoms. The Sitka Spruce—a valuable tree—is good also, and the Douglas Fir thrives in the hollows of wet woods. Even the Silver Fir, a tree that is not always happy in stiff and dry soils,

we have seen making a fine growth near water, and our native Yew is not averse to the waterside where dense evergreen covert is desired. The Red Cedar also grows well near water and gives dense cover. S.

THE "LAUREL" A USURPER.—The late E. W. Cooke, the artist, has a few words about this which cannot be too often repeated:—"There is no plant perhaps that deserves the title of 'usurper' more than what is generally called the common Laurel. No doubt this fine, free-growing evergreen is one of the most desirable of shrubs when kept in its appropriate place, viz., where it has ample space—in large shrubberies, or under trees on the margins of woods and copses, or flanking the carriage drive and boundary fence; for nothing can be better as a dense low background, a shelter from winds, or a screen from unsightly objects and buildings, offices, &c. In accordance with the ordinary ideas of gardening, this shrub is the first obtained from the nursery, as it is also the cheapest, to adorn the approach to the dwelling or the limited garden at the rear. Placed usually in the very front of the border, and quite close to the walk, it grows most rapidly into a vigorous shrub, its shoots often attaining in a single season to 3, 4, or even 5 feet in length. It is impossible to exaggerate the evil of which this rampant shrub has been the cause; the smaller conifers, such as Thujas, Junipers, and delicate Cypresses, as well as Bays, Laurustinus, Arbutus, Rhododendrons, and Roses, and other refined and compact shrubs, are constantly found to be quite hidden or destroyed by its wealth of shoots. I must confess that I have enjoyed the utmost satisfaction in ordering hundreds to be cut down and carted away, thus not only developing to the view many better things, but opening the finest vistas and distant peeps of scenery. This vaunted, self-called Laurel is really no Laurel at all; it is simply a species of Cherry (*Prunus Laurocerasus*), and has no right to trench upon the classical, noble family of 'Laurus,' which, without doubt, is one of the most valuable in the vegetable kingdom, being spicy, warm, fragrant, and including *Laurus nobilis*, or Sweet Bay."

GOURDS IN THE GARDEN.

BEAUTY of form and colour in the garden is usually due to foliage and flowers; less often in our country do we owe good effects to fruit, but I hope to suggest a few ways in which Gourds and their fine fruits may be used with great success in the summer garden. My first experience with them was in an old garden with a rough hedge on its southern boundary, in which a gap suggested the need of some quick-growing creeper to make good the breach. To do this a few Gourd seeds were sown close to the gap, and the summer being fine these grew and spread along the hedge in each direction, and though a very common type of Gourd, the result was such a success as to leave a lasting fancy for Gourds in the garden. The strong rope-like stems with their handsome leaves and spreading yellow flowers, the graceful outline of the finer shoots and twining tendrils, succeeded as the summer waned by the richly-coloured fruits, clothed that old hedge with a beauty that set one thinking as to how best to employ such means to yet finer effect. Nor is this difficult, for spots are not wanting in gardens which may be just as readily transformed into scenes of beauty, increasing the interest of the flower-garden and yielding fine effect in the garden landscape.

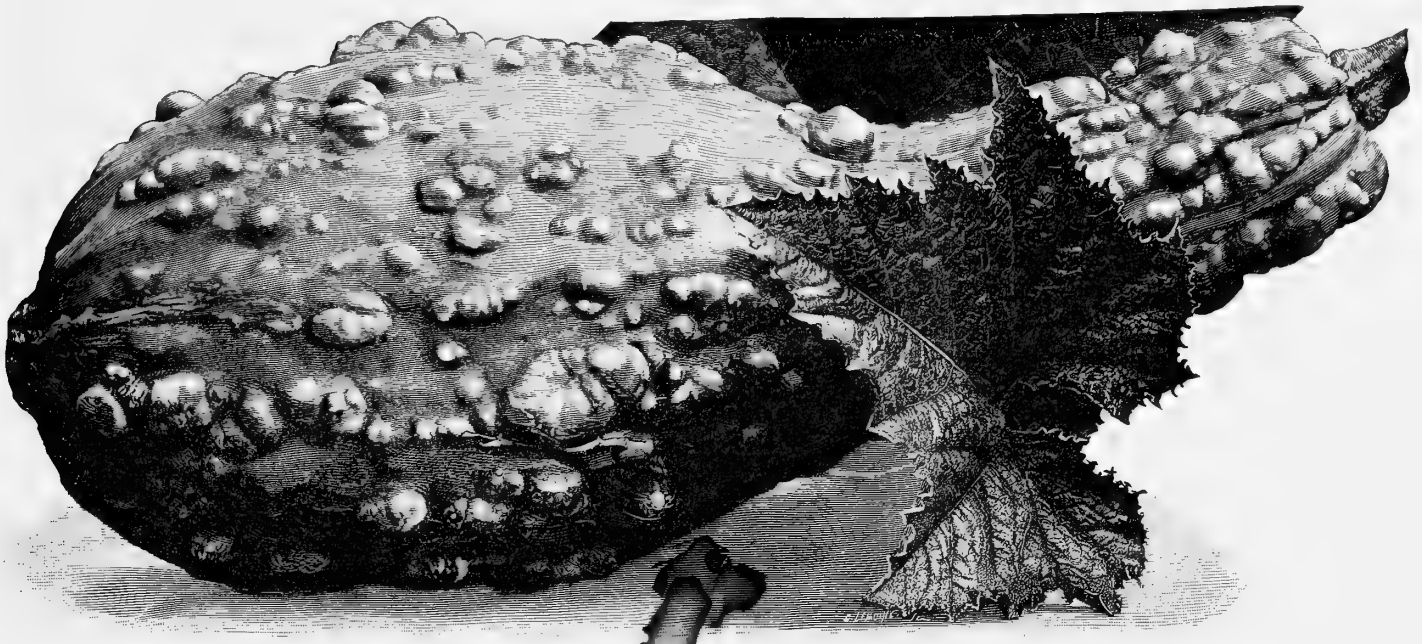
Some Uses for Gourds.

An herbaceous border, whether it be in the pleasure-grounds or the kitchen-garden, is made interesting even to the most casual of visitors by a show of fine Gourds, trained upon rustic poles, their fruits of green and white, yellow, warm brown, and red, giving fine con-

trasts and unfailing interest right up to the early frosts, and relieving the monotony and shabbiness that so often fall upon the herbaceous border in autumn. Or again, the rustic arches, arbours, and summer-houses so common in our flower-gardens may be beautified by the bold foliage and handsome fruit of the larger kinds, whose rapid growth and bold outline supply just what is wanted to clothe these structures quickly and with good effect. Summer-houses are often covered with Roses and perennial climbers, but these hold the damp more than is good in many places and they would be better covered with the quick-growing Gourds, all that is wanted being good soil and sturdy well-hardened plants of kinds suited to the surroundings. Coarse varieties, and those too suggestive of the Vegetable-Marrow should be avoided in the flower-garden. The smaller kinds bearing the many-coloured pear-shaped fruits, and the Apple, Orange, Egg, and warted Bell-shaped Gourds are best for arches, poles, and light fences or trellis-work. *Cucurbita pepo* can now be had in great variety, and the lightest and most refined kinds are very good for such work. For summer-houses, arbours, or covering out-buildings, Gourds of stronger growth may be used, such as the Stradella, Large Golden Bell, the white and striped Turk's Cap, Bishop's Hat, the Bottle Gourd (*Lagenaria vulgaris Siphon*), the miniature Bottle Gourd (*L. vul. minor*), and the Malabar Gourd (*Cucurbita ficifolia*) with its large oval fruits of green and white, and very handsome. This kind is also a strong grower with foliage

cut like a fig-leaf, and being one of the freest in fruit one may count upon a fair yield even in the coldest and wettest summer. An arch or arbour of this kind alone is almost tropical in its fine effect as the fruits develop. But to grow Gourds to the best advantage there is nothing so good as a pergola, which may be of the simplest material if sufficiently strong to carry a fair weight of fruit. In many gardens such a pergola would give an added charm to the

Gourd-laden trellises of southern Europe than of the English garden. In the growth of Gourds out of doors in this country much depends upon the weather, but, given a fair season with average sunshine, one may count upon a fair display of fruits. Some Gourds need more heat than others, the *Lagenarias*, for example, often failing to fruit in a wet season, whereas in a warm summer its many fine varieties of Bottle Gourds, Powder-horn Gourds, and the



YELLOW WARTED GOURD. (Engraved for "Flora" from a fruit in the garden of Mrs. Brightwen, Stanmore.)

grounds and is useful as a shelter in summer when it is often needed; it can also be used to add beauty to the kitchen-garden, or as a temporary screen. Our pergola should stand a clear 7 feet high, while its width will depend upon the space at command; its lower part needs short rods upon which to train the Gourds, which should be planted about every 3 feet, and when the structure is well covered and the fruits take form and colour, an effect is produced more suggestive of the

Hercules' Club will grow away luxuriantly. When planting a pergola with Gourds it is a good plan therefore to use these tender kinds sparingly and mixed with the hardier forms of *Cucurbitas pepo*, *ficifolia*, and *maxima*. In this way one is more independent of weather, one or both of these groups being certain to prosper, according as the season is good or otherwise. During the hot summer of 1900 a pergola here was remarkable for its fruits of *Lagenaria Hercules' Club*, some of them measuring

5 feet in length. During the sunless season of 1903, though planted in the same spot, the *Lagenarias* refused to grow, but the Malabar Gourd did so well as to make up for the failure of other kinds.

Culture. As with all annuals much depends upon the early stages of growth, and without this first success disappointment will ensue. Seeds should be sown singly in thumb pots about the second week in April, and germinate so quickly in gentle heat that the seedlings are ready for a first potting in eight or ten days. Care is needed at this stage to prevent "drawing-up." This shift from the seed-pots should be into 5-inch pots, using light soil; for the smaller kinds one potting is enough, but the larger varieties are better for a second potting early in May. When growth recommences the plants should be gradually hardened off by placing them in a cooler house, or in a cold frame where the lights can be removed in the day-time and air allowed at night. So treated the plants will grow away strongly when planted out. Two pests frequently cause trouble at this stage—mildew, and green-fly. The last is easily kept down by occasional fumigating; mildew must be watched and at once destroyed with sulphur or some other fungicide; when only a few plants are attacked they should be isolated or thrown away. The time of planting will depend upon the season. Should the weather be warm the last week in May is a good time, but if cold winds prevail it is better to wait for a week or ten days than risk a check. When the plants grow well from the

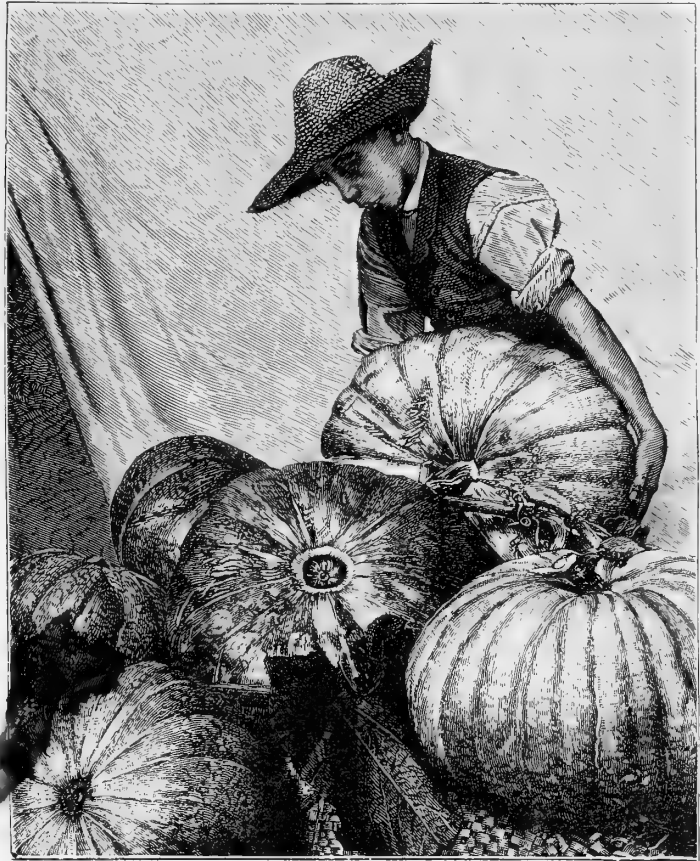
start there is little danger of failure. As with other plants of rapid growth, rich soil is necessary, and if at all heavy, each plant should have enough rich light soil dug in to give it a good start. After culture depends in a measure upon the structure which is to carry the Gourds. If on a pergola, the object will be to get strong shoots over the top as quickly as possible, and to do this the laterals must be thinned and the leading shoots carefully tied. On a pergola also it is well not to allow fruit within 3 feet of the ground, and above this the laterals may be stopped to bear fruit at any convenient height. Upon poles, the laterals must be stopped as soon as the fruits form, the object being to get the Gourds on short shoots as near the pole as possible; the leading shoot must also be stopped on reaching the top of the pole, too much foliage giving a heavy look and hiding the fruit. In the early stages plenty of water is needed, and later, when the fruits are formed in July, liquid manure helps to swell them. Care is needed in thinning fruit upon the poles, it is better to have a few good fruits well placed than a large number that are crowded and poor. On a pergola it is less difficult to place the fruit because the shoots can be trained in any way that seems best, but here, too, a well-spaced crop is of better effect and runs less risk from storms than an overcrowded profusion of leaves and fruit. If more convenient the seeds may be sown where they are to grow, but a fine seed-bed is necessary, and they should be sown before the end of the third week in May. Strong plants may be had in this way,

but they do not fruit so quickly, and in our climate early fruiting is a great advantage.

Allied to the true Gourds are other groups that are well adapted by their bright and attractive fruits, often of quaint shape, to give interest and novelty among climbers under glass. Especially is this the case where the plants have a free run under the roof of an airy stove-house. In this way the long scarlet fruits of the Indian Snake-Gourd, the vivid spreading fruits of *Momordica Charantia* and others of the same genus, the white marrow-like Gourds of *Benincasa cerifera*, and the yellow globe-like fruits of the Colocynth (*Citrullus colocynthis*) may all be used to vary and enrich the list of plants commonly grown in such a house. In the greenhouse also such plants as *Coccinia indica*, *Bryonopsis laciniosa erythrocarpa*, and *Lagenaria vulgaris* in many forms, give both shade and beauty; whilst in the smallest house *Momordica Balsamina* and *Cyclanthera ex-plodens* will weave graceful festoons of leaf, studded over with quaintly pretty fruits. The culture of these plants is as for other indoor climbers—light rich soil and 10-inch pots being all they need, with occasional waterings of weak manure. Hand fertilizing of female flowers (especially in dull weather) will secure fruits where they are best seen.

Value as Food. Little use is made of Gourds, other than the Vegetable Marrow, in this country. None the less

kinds such as *Golden Crookneck*, *Golden Bush*, and the newer American Squashes, are most useful for mid and late winter use and their keeping qualities excellent. The Ohio Squash keeps perfectly for six or eight months after cutting, with flesh firm and delicate, and in every way superior to the older Pumpkins. This would form a good addition to our winter vegetables. In the United States and



STORING WINTER GOURDS IN SURREY.

southern Europe these and other Gourds are much used in winter for soups, purées, and (in the States) for "pies." Gardeners would find them useful and profitable, easily grown, and stored for the winter in an airy frost-proof room. There are, of course, Gourds quite unfit for food, such as the Bottle Gourds (*Lagenaria*) and their varieties, which are both narcotic and purging. The best

edible kinds are the forms of *Cucurbita pepo* and *C. maxima*, and especially those recommended in our list of varieties.

Good Kinds. For growing upon poles the best Gourds are *Cucurbita pepo*, varieties Golden Bell, White Egg, Ostrich Egg, White Green, Warded, and Bicolor Pear Gourds, the Orange, Lemon, Apple, Green Striped Custard, and Melopepo Gourds, and the small Bottle Gourd (*Lagenaria vul. minor*). For clothing a pergola, beside those mentioned the following may be used: Spoon Gourd, Stradella, Large Warded Bell, Dipper, and Large Bottle Gourd, Hercules' Club (forms of *Lagenaria vulgaris*), Bishop's Hat, Malabar Gourd (*Cucurbita ficifolia*), and Turk's Cap in green, white, and red varieties. For bush-plants and for winter use the best are Golden Bush, Golden Crookneck, Red Etampes, Golden oblong Pumpkin, Ohio Squash, Golden Hubbard Squash, and Scalloped White Bush.

JOHN W. ODELL

The Grove, Stanmore.

CORIARIA TERMINALIS.—To Messrs. Veitch of Exeter we are indebted for finely fruited sprays of this plant, so utterly unlike others as to be worth a place in gardens of light soil. It is a stout herbaceous sub-shrub of rapid growth in a sunny spot, bearing at the end of every shoot tapering spikes of glistening yellow berries, thickly set upon a crimson stem. The finest of these spikes measure fully 9 inches long, and though smaller than this upon the side shoots, the combined effect is good and continuous. Being of sappy growth the branches soon droop when cut, but in the autumn border it is new and striking. A native of Sikkim, it is hardy everywhere in the south of Britain. The flowers are not showy, and, as in others of the family, the berries are poisonous.

NEW EARLY-FLOWERING IRIS.*

OF recent years the kinds of early Iris have increased, four or five new species of the dwarf Juno section having come to us from Asia Minor, and at least as many more allied kinds from countries further east through Turkestan to the Indian frontier. Several of this eastern group—which includes *bucharica*, *Fosteriana*, *Willmottiana*, and *warleyensis*—come very near *Iris orchioides* in leaf and manner of growth; the plants found by Siehe in the Levant approach *Iris persica* so nearly that most of them, though now classed apart, were at the outset regarded as forms of that pretty though delicate species. These new kinds are still scarce in gardens and confusing from the fact that they vary so much in colour and form of leaf and flower, that it would be easy to name a score or more of new kinds running one into the other and closely linking the group with the Persian Iris. For the moment, however, we may rest content with a brief outline of the four or five recognised species.

The best known of these is *Iris Heldreichii*—the plant of our plate, first flowered at Kew; shown by Messrs. Wallace of Colchester before the Royal Horticultural Society in February 1900, it gained a first-class certificate as *Iris stenophylla*—a name since corrected. It is a charming bulb for the rock-garden in early spring, hardy, distinct in colour, and the best of the one-flowered section of Juno Iris. The blue colour of its flowers and its free growth single it out from the forms of *I. persica*, its vigour

* With coloured plate from a drawing by H. G. Moon at Warley Place.



IRIS HELDREICHII.

showing in the stout fleshy roots, and flowers often 4 inches across, upon stems 3 to 4 inches high. It blooms very early, the first flowers opening in January of a mild season, though early March is its time of full beauty. Though of good substance, the flowers cannot always withstand our rough March weather in the open, but with the shelter of a glass shade or a spare light they will last for three weeks in beauty. The plant is of easy growth, doing well in any good garden soil, and content with the treatment of other rock plants. A pretty effect can be gained in the contrast of a group of these fine blue flowers with masses of Winter Aconite, or the yellow Winter Jasmine. There are forms with slight differences in colour, but all share a distinct shade of violet-blue. It is a good plant for gentle forcing, flowering early, and its blossoms fragrant. After flowering indoors the bulbs should be hardened off and planted as little groups in the border or rock-garden, where their effect is increased by a carpet of neat plants to cover the soil and prevent splashing. Slugs—the one drawback to this plan—may be guarded against by mixing sharp sand freely with the soil; this is itself a good thing for many of the creeping plants suited to the purpose. In its own country *Iris Heldreichii* grows upon the lower mountain slopes, often blooming very early in the shelter of thick belts of Corsican Pine.

IRIS BOLLEANA.—A scarce and beautiful plant, of which a small quantity has been found upon low limestone hills skirting the coast, and only a few hundred feet above the sea. Its flowers are

of clear yellow, with or without blotches of bright violet on the tips of the inner bracts, and similar in character to others of the group. Low tufts of very narrow leaves, which are limp and strangely curled as though falling in disorder.

IRIS SIEHEANA.—Regarding this plant (also known as *I. Hausknechtii*) there is some confusion, due in part to its variable character. It has also borne the name *Iris persica magna*, but is a distinct species though nearly allied to the Persian Iris, and like it in its feeble growth. So far it has not done so well as the other new kinds but is still under trial. Its forms vary a good deal, the leaf being broad and white-margined in some plants, and in others narrow, much longer, and curling over in disorder. The flowers, too—one to each plant—vary from silver-grey marked with red, to pale reddish-purple blotched with white and yellow, and spotted with deep brown. Though beautifully blended its tones are too subdued for effective garden use. This species is from the province of Amasia in Asia Minor, growing upon dry hill-sides amid the dense brush of Pine-forests.

IRIS TAURI.—For beauty and rich colour this promises to be one of the best of new Iris, while it is also early in flower, and unhurt by severe weather even when starting into growth. It might almost be called an alpine Iris, coming from mountain pastures of the eastern Taurus at over 6,000 feet, though also found in woods of Juniper at a lower level. Its first flowers open with the melting of the snow and a few weeks after those of *I. Heldreichii*, which never

reaches so high as this; its time of full beauty during March is, however, very little later and its season quite as long. Each bulb bears three flowers of nearly 4 inches across but variable in colour, form, and fragrance, some coming near *I. Heldreichii* and others more like the Persian Iris. The colour prevailing in all these forms is rich violet or violet-purple, but we find shades of blue, rich violets shading to green, blotches of purple touching black, with showy white flakes upon the broad blade, flanking a central stripe of rich yellow. Even the folded buds are of a pretty bronze or old gold, and the flowers keep their colour so well that few among bulbous Iris can equal it for effect. The leaves are 4 to 6 inches long, very broad, springing from white sheaths, and produced in two ranks at the same time as the flowers. Its culture is simple in any warm spot in the rock-garden or border, with a deep run of light soil mixed with porous fragments to ensure drainage and the depth necessary to the long fleshy roots.

GLORIOSAS, or CLIMBING LILIES.—In addition to the kinds of *Gloriosa* described in the August number of FLORA (page 248), there is a very distinct one which has recently been grown and exhibited in England.—*Gloriosa superba* var. *lutea*. It bears flowers of pure buff-yellow without a trace of red, is of tall growth, and a free bloomer. The petals vary in width, being fairly broad in some plants and very narrow and curled in others. This variety was found by myself in Rhodesia, in December of 1899, and almost at the same time by my husband, in an out-of-the-way part of the country some 70 miles nearer the Zambesi than where I obtained my tubers. They were exhibited in 1901 and again two years later, when they gained an award of merit from the Royal Horticultural Society under the name

Gloriosa lutea. It was considered by the Society as a new species; the dried flowers brought home in our collection for the Kew herbarium were previously named *Gloriosa superba* var. *lutea*, and for the present that name must stand, but the Kew authorities had not seen an entire or living specimen. The plant is most attractive, and well worth cultivation.

I see that *G. Carsoni* is referred to in the same list as from near Tanganyika, but I have seen and collected plenty of it in Rhodesia. It grows there in dry open ground with nothing to cling to, the stems standing quite erect and about 3 feet high.

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10, Eaton Place, S.W.

THE GREATER TREES OF THE NORTHERN FOREST.—No. 20. THE BEECH (*Fagus sylvatica*).

ONE of the kings of the northern forest for beauty and stature, the Beech has a merit over the Oak in that it grows over a much wider area in all sorts of poor and arid situations, from Northern Greece to Denmark. The Oak loves the cool and rich lowland soils and must have them if we are to get good results, but the Beech adorns and enriches the poorest land we know—chalky downs, sandy wastes, and rocky hills. This is a great merit in view of the vast area of down country, often bare of trees, in southern England, as well as the poor limestone hills of Ireland and the north country. The economic value of this tree we may see in Bucks and the districts near, where poor ground covered with Beech gives five times what it would yield as arable. To show what a return Beech will give on such soils we have an apt instance in the great Beech forest at Lyons-la-Forêt in northern France, under conditions of soil and climate which are much like those of our own country; it proves also

how valuable are forests of one kind of tree when that is the one best suited to the soil. The Beech has been the prevailing tree in this district for ages, the present forest being one of the oldest in France, and in former days reserved to the kings for hunting. It is planted on the "high forest" plan, *i.e.*, without underwood, and covers an area of about 26,000 acres, mainly of chalky soil, and for that reason is given up to the best native tree for such land. The trees are in the main not better grown than those of English woods, but in some parts have reached great size and dignity; in fertile hollows stems of 140 to 150 feet are not uncommon, and I measured one stem 160 feet high. They stand shoulder to shoulder in close rank, though not so thickly as to injure each other. They are thinned in regular years according to requirement, and each tree has all the space given to it that it really needs to grow well. There is no underwood, the aim being to grow trees with the largest amount of bole. In spite of the present low value of timber, and after all wage payments for keepers, woodsmen, and a first-class forest superintendent have been deducted, the forest pays an annual revenue of over twelve shillings per acre to the State. Thus we have evidence of the great value of the Beech in woodlands of the home counties and in the forests of Normandy. With us it is true that owing to foreign imports the work of the rural industries concerned with home-grown timber has been much reduced, but it is to be hoped that the present neglect to safeguard these industries will not go on for ever. It is a common

belief that no shrub will grow beneath the Beech, but this is happily untrue, for the best of all our evergreens, the Holly, often grows well of its own choice in Beech woodlands, giving a pretty effect in them, though its growth may be less vigorous than where more exposed. As little else will grow under Beeches, it would be wise for those who care for the beauty of the wood to add groups of seedling Hollies here and there, to gain the pretty evergreen undergrowth of Holly that may be seen in some of the Berkshire Beech woods, and also in Epping Forest.

Area.

The natural area of the Beech extends from Sicily to beyond Christiania in Norway, and from the Caspian to the shores of the Atlantic, including France, but excluding the greater part of Spain and Algeria. Only in the northern parts of this area, as upon the shores of the North Sea and around the Baltic, is it a tree of the plains. Its maximum elevation in Norway is below 1,000 feet, while on the slopes of Mount Etna it rises above 7,000 feet. In the Vosges of France its limit is between 4,000 and 5,000 feet; 5,000 in the Alps of Jura; 4,400 feet upon Mount Cenis; and between 5,000 and 6,000 in the Pyrenees. The southern limits of its zone are less defined, but it includes the region of the Vine without, however, descending into the valleys. Towards the north and in high altitudes it is checked by the cold, and disappears even from the plains.

In the Landscape.

The Beech is so good in colour that we can hardly misplace it, though, per-

haps, for its fine winter as well as summer effect it is best seen as a massed woodland tree. Its colour changes much during the growing season, being of a light green at first, gradually becoming darker as the season advances till its autumn hues appear, when it assumes a warm russet-brown colour. In fine autumns especially its effect is as good as that of any tree, its colour lasting longer than that of many of the American trees. A variety of the Beech has leaves of deep-bronze or purple colour: it should be used sparingly, and I only name it here because it can be raised true, or nearly so, from seed. Some which I have lately planted in that way promise to take their place among forest trees, and being seedlings we may look forward to some variety as to colour.

Loose, gravelly, and permeable soils suit the Beech best when fed with frequent rains; stiff, moist, and swampy soils are not so good, though we may see it sometimes thriving in such land. The chemical nature of the soil is immaterial, and fine Beech trees are met with upon sand, granite grit, chalk, and light soils; but chalky soils as of the Chiltern Hills and South Downs suit it best. Left alone its tendency is to oust other trees such as the Oak, the Pine, and the Birch, and in Denmark and Holland the Beech has bit by bit overgrown all its rivals.

Wood. The wood of the Beech is white when freshly cut, but takes a reddish tinge upon exposure, and in seasoning becomes a uniform light red colour, without any marked distinction between the sapwood and the hard wood. In the heart of old and diseased

trees it often takes a russet colour. The grain is not close, and the wood is wanting in suppleness, apt to warp, liable to become worm-eaten, and does not polish well. Exposed to changes of heat and moisture it does not last, but in water, or in wet places, it is more durable. Being easily worked it is used in various industries such as cart-building, chair-making, for clogs, and for turners', joiners', and coopers' work. It is one of those woods easily treated with preservatives, and when so prepared is valued for railway "sleepers." It has also an important use as fuel, not that its heating capacity is higher than that of other trees, but being abundant in many lands it is more commonly used. It yields charcoal which glows to its last ember, and it is therefore esteemed in cookery and in smelting industries. As firewood it is good, and burns with a cheery flame, the logs melting away sooner than those of Oak.

In the great forests of the continent tall seedling trees are left here and there to renew the forest when the grown trees are cleared off. Stocks of young trees are usually abundant in forest nurseries, and only upon the largest estates, or where the soil is specially suited to the tree, is it worth while to raise it from seed. In woods where swine feed, quantities of seed are often trodden into the ground, and springing up help to its renewal.

REFERENCES.—Mathieu, *Flore Forestière*, 4th edition, p. 314; Selby, *British Forest Trees*, p. 305; Loudon's *Arboretum Britannicum*, vol. 3, p. 1950; Cobbet's *Woodlands*, par. 144; Boppée et Jolyet, *Les Forêts*, p. 67; D. Cannon, *Semer et Planter*, pp. 69 and 169; Hartig, *Diseases of Trees*, p. 308; Evelyn's *Silva*, vol. 1, p. 131; Nisbet, *Forests and Woodlands*, p. 130.

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THE COOLER FILMY FERNS.

AMONG the myriad forms of plant life few are of greater interest and beauty than these exquisite and fragile trailers, with their transparent and lace-like tissues, often finely tinted, and thriving under conditions impossible to most other plants. Their charm is such that when once anyone is interested in their culture, they often become enthusiastic collectors of the many fine kinds now at command, and the ease with which most of these are grown make them one of the

and beautiful specimen plants are often so grown and thrive for years; but where a small house can be given up to them the result is more satisfactory and their beauty better enjoyed than when more closely confined. Our engraving gives some idea of what can be done in this way under conditions unsuited to the growth of anything but Ferns—of which these are without question the most beautiful group.

Much difference of opinion has existed as to the place that the Filmy Ferns



A HOUSE OF FILMY FERNS.

most satisfactory of plant studies. That they do so well in towns is one of their great merits, and there is many a gloomy courtyard or passage in our cities, never reached by the sun and so shut in as to secure the even temperature so desirable, that, with a little contrivance, may be transformed into a scene from fairyland by the use of Filmy Ferns. It is also possible to grow them well in living rooms—under bell-jars, and in fern-cases—

should occupy, for whilst one of our greatest authorities separates them from the true Ferns, others have placed them at the head of the list. Their true place is, perhaps, the lowest in the order, their structure being the simplest to be found among Ferns. Most of the Filmy Ferns will thrive in a lower temperature than would seem reasonable in view of their native countries, but it must be borne in mind that although many of them are

from tropical lands they grow in mountain forests or in deep shady ravines often at a great height, and thus do not require the heat that one might suppose. At the same time there are kinds which will not thrive without brisk stove heat. Though Filmy Ferns are not difficult to grow they will not suffer neglect, but must be cared for, and the conditions of atmosphere and temperature constantly watched. Moist air, a subdued light, and even temperature are the three essentials to their well-being. With a few exceptions, they dislike heavy gloom, yet should never be exposed to the sun's rays. Some growers sprinkle their plants overhead, and I am aware that a few are sufficiently robust to stand this treatment, but if continued it causes many to lose the delicate green of their fronds, whilst syringing is fatal to the woolly-haired species. The syringe may, however, be used amongst Filmy Ferns to damp the floors, stages, or walls, which, with some pans of water for evaporation, will be found sufficient to charge the air with moisture, and produce a dew-like mist on the foliage such as they enjoy; for, although their fronds should never be allowed to curl, it is not well to keep them in a drenched state, and those who preserve the happy medium will secure the greatest success. For growing Filmy Ferns upon a large scale, a house should be given up to them, but in such a house many other Ferns would grow better than in an ordinary stove or greenhouse. For such a house I would choose if possible a natural, narrow ravine, roof it with glass, and glaze the ends; such a house would be inexpen-

sive to build and to heat. In its fitting up, blocks of sandstone should be provided for the Ferns to cling to, and to hold the moisture so necessary to their fine roots. Where this is impossible the next plan is to have a few large Wardian cases, fitted up with sandstone in miniature rocks and valleys to give surface and foothold; or the walls of a plant house may be covered with glass doors, and nooks made for Filmy Ferns, which, for convenience sake, may be divided into two sections—those with erect stems, and those with creeping rootstocks. Those of the first section should be planted in the usual way in good rough peat, a little loam, plenty of sharp sand, and live Sphagnum Moss; always bearing in mind that good drainage for the roots is essential. Those of the second section, with creeping stems, usually produce aërial roots, which cling to any moist surface; blocks of sandstone suit them admirably and will soon be clothed with delicate drapery. There are a few kinds outside either of these sections, with climbing stems but no aërial roots; these should be planted in hanging baskets or in a rocky niche from which they can trail downwards. Many of the Filmy Ferns are rare and expensive, but some are within the reach of moderate means; moreover, all those here quoted as thriving in a greenhouse may be grown in a Fern-case in the drawing-room and enjoyed to fuller perfection than in their native glens. Many of these Ferns have been introduced by Messrs. Backhouse, of York, by whom they are well grown, and a number of kinds may be seen at Kew, but many

of the finest plants and collections of Filmy Ferns belong to private growers in towns and cities where Wardian cases and other contrivances are often used with wonderful success. In growing these plants it is impossible to maintain a fixed temperature, but one as even as can be is a matter of importance, for in their native forests and sheltered ravines the variation of temperature is very slight, and experience proves that a quiet, shady atmosphere and uniform temperature produce the best results. These greenhouse kinds thrive at from 40 to 60 degrees, and though during the summer it is not always possible to keep the temperature so low, they will not suffer for awhile. As the charm of these plants is the freshness of their delicate fronds, which it is impossible to cleanse when once soiled, only the purest water should be used in damping them and hence the gain in keeping their surroundings moist, for when watered by their own condensed moisture, all impurities are left behind. The following are all worth growing, each possessing charms of its own, although it is not likely that all will find place in one collection:—

Hymenophyllum æruginosum.—
True Filmy Ferns. On account of the long whitish or tawny hairs with which

the fronds are clothed, this kind must not be watered overhead. Its fine creeping roots throw masses of tiny oblong fronds, thrice cut into close dense segments, covered with long silvery hairs becoming yellow with age. A handsome plant from New Zealand, thriving upon Fern-stems or bare moist sandstone.

H. bivalve.—In cultivation this is rare and not common in its own country; the fronds are erect and broadly triangular, three times divided, the segments being somewhat spiny; colour deep green. New Zealand.

H. caudiculatum.—A fine bold-growing species covering moss-grown tree-trunks. It is one of the finest of cultivated Hymenophyllums, with translucid fronds 10 to 40 inches long, their stems broadly winged and the leafy portion spreading and thrice divided, the tails of the segments being drawn out into long tail-like points; colour, bright shining green. Abundant on the Organ Mountains, and thence through Peru, into Chili.

H. chilense.—One of the gems of the group, growing in dense tufts completely covering rocks and tree-trunks in its own country. Its tiny triangular fronds, seldom more than 2 inches long, are once or twice divided, clothed with simple rigid hairs, and pale green in colour, with conspicuous dark veining over the entire surface. Chili, and Isle of Chiloe.



TUNBRIDGE FILMY FERN (HYMENOPHYLLUM TUNBRIDGENSE).

H. crispatum.—A variable plant, specimens from northern India differing widely from the form found in New Zealand. The roots are creeping, with fronds of 4 to 6 inches long and much waved and crisped, thrice divided into blunt segments, and deep green in colour. It covers a block of sandstone or a Fern-stem with a dense drapery, beautifully curled, and distinct in appearance.

H. cruentum.—A very distinct plant with small entire fronds of only a few inches, transparent as sea-weed, broadly triangular, and prominently veined; when young they are green, changing with age to a rosy-brown or dull red, and lasting for a long time. A very rare plant from Chiloe and Valdivia, where its creeping stems grow over moist tree-trunks.

H. demissum.—This fine species is a general favourite and the easiest of all to grow, producing deep green fronds, which are thrice cut into very fine segments. The best kind for beginners and one of the most beautiful, the light and dark green of the young and old fronds being prettily contrasted. New Zealand, and islands of the Pacific.

H. dichotomum.—A charming dwarf species, thriving upon mossy trees and remarkable for its finely crisped fronds of pure transparent texture, which single it out from other kinds. Its fronds are about 6 inches long, broadly triangular in shape, and twice divided; the delicately crisped segments are somewhat toothed or spiny at the edges, and deep green in colour; roots creeping. Grows well upon Tree-Ferns or even a wooden block covered with moss. Chiloe and Juan Fernandez.

H. dilatatum.—This is perhaps the largest and most beautiful of the genus. Its fronds are broad, three times divided, with the stems winged, of a delicate translucent green colour, 12 to 18 inches long and gracefully arched; they grow upon creeping roots, which should not be buried but allowed to climb. Abundant in New Zealand, Java, and the isles of the Pacific, thriving upon mossy tree-trunks.

H. flabellatum.—A variable species, some forms bearing short, dense fronds, while more often they measure 10 or 12 inches; they are twice divided and of bright, shining green colour. Australia, Tasmania, and New Zealand, the creeping roots growing over Tree-Ferns or filling the moist hollows of rocks and tree-trunks. Syns. *H. nitens* and *H. nitidum*.

H. flexuosum.—A Fern with broadly ovate fronds, finely crisped and waved at the margin, much divided, deep green in colour, and nearly a foot long. It is one of the few kinds not injured by overhead sprinkling. Akin to *H. crispatum*, it is found only in North Island, New Zealand, its wiry roots rambling through decaying vegetation.

H. fuciforme.—A charming plant of very strong growth, thriving upon tree-trunks in shady woods. The fronds are from 1 to 2 feet long, very broad, erect, smoothly shining, much winged, and suffused with a beautiful grey bloom. Its creeping roots are thicker than in most Filmy Ferns, and more like the woody crowns of other Ferns. It delights in a moist

atmosphere, and is from the islands of Chiloe and Juan Fernandez, but very rare.

H. magellanicum.—Creeping roots, with upright, rigid fronds upon wiry, winged stems of several inches; the leaflets thrice divided, tough in texture, with the margins toothed and hairy, and pale green in colour. Very impatient of water upon the fronds. From Chiloe and heights of the Organ Mountains in Brazil. Syn. *H. attenuatum*.

H. pectinatum.—One of the best kinds, very distinct from others, but seldom seen in collections. Creeping roots, with fronds of 6 inches or more, grey-green in colour and beautifully veined, their tips curving upward, and toothed on the upper side only, thus resembling a comb. Found only in southern Chili.

H. polyanthos.—A species of wide range, common in the West Indies, South America, Western Africa, the East Indies, New Zealand, and other lands, and much varied as a result. The West Indian form is commonest in collections, but from dried specimens that from New Zealand would seem the most beautiful. Root-stock wiry and creeping, with fronds thrice divided, dark green, and 6 to 12 inches long. This kind does well in an airy place, or may be grown very prettily hanging from wooden blocks or bits of Fern-trunk, where its finely arching fronds are well seen. Syn. *H. protrusum*. A form from Ceylon and Malacca, known as *Blumeanum*, has its fronds narrower and more tapering.

H. pulcherrimum.—This rare plant is near to *H. dilatatum*, and fully as graceful yet very different. The triangular fronds are 8 to 15 inches long, and 4 to 6 inches broad, deeply divided into fine segments of soft texture and pale green colour, drooping from the creeping roots. New Zealand, about Lake Waikare.

H. scabrum.—A fine erect-growing plant with finely arching fronds of 12 to 20 inches, the segments being several times divided; their colour is dark dull green, in effective contrast with the stout reddish hairs upon the stem. New Zealand. It does best in an airy place and is averse to having its roots buried or the fronds wetted overhead.

H. tunbridgense.—A compact little plant, which although a native is well worth growing, but not the easiest to manage. The fronds are freely produced and soon cover the ground

with a beautiful carpet; they are 3 or 4 inches long, erect, twice divided, and olive-green in colour; if watered overhead, however, they soon turn black. It does best in a layer of peat or sand pressed hard upon sandstone, but is often difficult to start; a way that often succeeds is to lay the young plant upon bare sandstone with a second slab over it for several weeks; upon its removal the roots have often taken firm hold of the sandstone, and soil may be added as required. Though called a British plant it has a wide range, being found in Madeira, the West Indies, Central and South America, and parts of India and Japan, at heights of 1,000 to 5,000 feet. It seeks a damp and sheltered spot, growing best upon perpendicular rocks and tree-trunks.

H. valvatum.—A charming plant of distinct habit, producing from creeping roots fronds of 6 to 12 inches, very transparent in texture, broadly oblong, and thrice cut into narrow, waved segments, slightly hairy, smooth, and rich green in colour. This kind makes its growth in autumn and winter when other ferns from the same region are at rest, and though not a hairy kind it is very sensitive to water upon its delicate fronds. Central America, Columbia, and Peru, often at heights of 3,000 to 6,000 feet.

H. unilaterale.—Though often called a British plant under the name of Wilson's Filmy Fern, this is widely distributed. It resembles the Tunbridge Fern (*H. tunbridgense*), but is commoner, and may be known from it by its longer, narrower fronds and their curved segments, its more rigid habit, and by the edges of the involucre being smooth. Another peculiarity is the renewed growth of the old fronds during several seasons. It is a pretty plant, common in parts of Scotland, and also found in northern Europe, South Africa, South America, and New Zealand.

Crape Ferns
(*Todea*). *Todea hymenophylloides*.—A charming Fern of easy culture and dainty deep-cut

fronds. Its trunk is thick and erect, and the fronds from 1 to 2 feet or more in length, triangular in outline, thrice divided, very transparent, and deep green. It is a good plant for the Wardian case and easily grown from spores, the seedlings showing much variety as to form but always sterile; one dense and tufted variety

bears the name *compacta*. Syns. *T. pellucida*, and *Leptopteris hymenophylloides*.

T. intermedia.—A plant of robust growth, with fronds of the shape, form, and transparent texture of the kind just described, yet curled and crisped as in *L. superba*, with stalks densely covered with short, woolly hairs. It is thus between the two, and while found wild in parts of New Zealand, others identical with it have been raised by crossing, proving it to be a natural hybrid.

T. superba.—It is impossible to fitly describe this beautiful Fern, known variously as the "Crape Fern," "Prince of Wales's Feathers," and the "New Zealand Filmy Fern." Its crown swells into a knotted fibrous mass rather than a trunk, though sometimes 18 inches high, and supports a crown of dense fronds from 2 to 4 feet long, 6 inches to nearly a foot wide, and of the most dainty appearance. The segments are finely divided, beautifully waved and crisped, and of a brilliant sea-green. The points of the segments curl upwards over the fronds, like the curling plumes of an ostrich feather. It grows in shady dells, upon rotten leaf-mould, and does well in a Wardian case. New Zealand. Syn. *Leptopteris superba*.

Trichomanes exsectum.—A lovely species with creeping roots which hang from the roofs of damp caverns and overhanging rocks. Its fronds are slender, pendulous, and cut into delicate segments as fine and transparent as the daintiest green sea-weed; they are often 10 or 12 inches long and nearly 6 inches wide, with segments finely divided, and vivid green. Grows well upon hard wood or stone. Southern Chili and Juan Fernandez.

T. humile.—A pretty dwarf-growing Fern forming a dense covering wherever it spreads. The fronds, produced upon slender creeping roots are often only 2 inches long, lanceolate in shape, and twice deeply divided into narrow segments of bright transparent green. Does well upon a block of fern-trunk. New Zealand, Java, and islands of the Pacific.

T. parvulum.—A very dwarf kind, easily grown and suited to small fern cases as doing well upon small pieces of peat or fern-trunk suspended from the roof, and quickly covered by the thread-like interlacing stems. I have never seen the fronds more than an inch long; they

are densely matted and rounded like a miniature Fan Palm, deep shining green in colour, and very transparent. A plant widely spread through China, Japan, the East Indies, and Madagascar.

T. Pyxidiferum.—This covers a wide area, being common in the West Indian Islands, South America, and at considerable elevations on the Cameroons Mountains of West Africa; as a result it varies much. The fronds are produced upon slender woolly roots, which creep over the trunks of Palms and other trees; they vary from 3 to 6 inches in length, and are twice or three times divided into narrow, transparent segments, deep green in colour, which quickly weave a rich drapery in the Fern-case.

T. radicans.—A charming plant and one of the loveliest of Filmy Ferns, familiar to many as the "Killarney Fern," but little of it is now to be found there, though it grows freely in adjoining counties. It is the most beautiful of all British Ferns, spreading by a creeping root which bears fronds from 6 to 18 inches long, broadly ovate in shape, very dense, much divided, and deep sea-green in colour. Of this species there are many forms, all differing in beauty. It delights in heavy shade and has a fondness for creeping over stones. Though found in parts of Wales, it is unknown in England and Scotland, though it grew in Yorkshire many years ago till hunted to death by collectors. It is, however, widely spread over both hemispheres with forms in the West Indies and North and South America, reaching eastward through the Azores to Spain and even India, and westward through the islands of the Pacific. Its best varieties are *alabamense*, a very pretty plant found upon wet and shaded rocks never reached by the sun, its delicate fronds lasting fresh for several seasons; *Andrewsii*, an Irish form with narrower and less compact fronds; *cambricum*, the Welsh variety, differing slightly in the form of segments; *concinnum*, with oval fronds upon very short stalks; *dilatatum*, very distinct, with large dark green fronds and coarser segments; *Kunzeanum*, a Brazilian form with firm leathery fronds of 12 to 18 inches; *Luschnatianum*, also from South America, in which the fronds have no stalk, but are attached directly to the creeping roots; and *proliferum*, a very curious Irish variety, reproducing itself from small bulbils as in certain Aspleniums. Syn. *T. brevisetum*.

T. reniforme.—This peculiar little plant is known as the "Kidney Fern" of New Zealand, with creeping roots and leathery but very transparent fronds, nearly round, and of rich deep green; when fertile the spores form a beautiful fringe round the edges of the fronds, which on strong plants are 4 to 8 inches wide. It does best upon soft broken sandstone, mixed with rough peat.

T. rigidum.—A charming and distinct plant of broadly oval fronds, variable as to size, divided three or even four times into very dainty segments, the lower lobes narrow, toothed, and of firm texture. Its habit appears a little stiff from the long rigid stalks supporting the fronds. West Indies, South America,



NEW ZEALAND KIDNEY FERN (TRICHOMANES RENIFORME).

the Philippines, and Ceylon. The plant known as *T. elongatum* is now considered as a form of this, with a tufted habit and fronds of 6 to 12 inches in height; they are triangular, twice divided, dense, and deep green in colour. New Zealand. Syns. *T. obscurum* and *achilleæ-folium*.

T. venosum.—A free-growing plant which soon covers a Fernstump or block of sandstone, often being found to clothe Fern stems or tree trunks to a great height. The root-stock is thread-like in its slenderness, with fronds from 2 to 5 inches in length, pinnate, very delicate, and of shining light green. Abundant in New Zealand, East Indies, and Tasmania.

G.

ANDROSACE.

OF all flowering plants for rock-gardens this group is the most truly alpine. It is confined to the bleak summits many thousands of feet above the sea, beyond the limits of tree or shrub, and rarely creeps down even to the highest of the scanty pastures, as do the Gentians and other alpine flowers. Some miniature kinds grow like tiny shrubs dotted upon the open slopes, where the snow falls early in autumn. Others are yet more shy, clinging like tufts of moss to the rocks, nestling in the clefts upon their sunny and more sheltered surfaces, beside the alpine Primulas to which they are nearly related. Their way of growth is usually as tiny cushions of green, or grey, or silver, often little more than an inch high and set as closely beneath a sheltering ledge or in a crevice as any limpet on its rock. Deep buried in the snowdrifts they rest unharmed the winter through, and when the lengthening days end their long night it is time to hide themselves anew, in such a burst of flower that one is fain to marvel at their beauty. Owing to changed conditions they bloom earlier in our rock-gardens, and through a longer season than on the mountains.

Culture. A few kinds such as *A. lanuginosa* and *sarmentosa* do well almost anywhere, if not too near the smoke and dust of towns; but many sorts, among the dwarf "mossy" kinds, rarely thrive except in northern or hilly districts, and under conditions more like those of their native haunts. To find such conditions is difficult in many gardens, and in this lies the care required by these

alpine gems. Nor is it only the need of rocky clefts and fissures, filled with good soil, and secure from extremes of wet or drought, but the very nature of the rock—whether sand or limestone—is of importance, as failure often results from want of care upon this point. As with the mountain Primulas, it is waste of effort to try to grow the sand-loving kinds in any other soil, and failure is just as certain if those found upon limestone soils are deprived of it. Then again, when out of flower it is easy to forget such tiny tufts of verdure, so that they often suffer neglect while making the summer growth upon which their beauty depends. A constant watch is needed for aphids, slugs, and red-spider, some kinds, such as *A. Chamæjasme*, being often killed or much weakened by this pest. Towards autumn syringing them with clear water does good, and a surface-dressing of soil and stone-chips helps before winter, and should, if need be, be renewed in spring, when all planting should also be done. When this top-dressing is well done fresh roots are often made from the under-side of the prostrate stems, and this is a great gain. The woolly-haired kinds, which often fail from damp in our winters, should be planted in the crevices of upright rocks, or under protecting ledges such as that shown in our engraving; where this is not possible it is a great help to cover them from October to March with a tilted glass, to ward off rain and cold dews, while allowing a free play of air. The rocks among which they are planted should be well sunk in the ground with thin layers of good soil and broken stone

between them; the roots of the Androsace delight in the layer of moist earth just under stones. Most kinds thrive in full sun, the best aspects being south and west, never north. Some kinds do well in pots and are pretty so for a cool house in spring, and afterwards plunged to the rim in moist sand, cocoa-fibre, or some similarly cool material. While a few kinds may be raised from runners and cuttings, and some others from division, many sorts can only be grown from seed sown in sandy peat as soon as ripe, and this way should be followed in the hope of good varieties. Over forty species of Androsace are known and others may be found when the mountains of Thibet and Western China are fully explored. Twenty kinds are found in the Alps, some extending eastward by way of Austria, or southward to the Pyrenees, where four others occur peculiar to that country. One little gem is found only upon the rocky heights above Lake Como; others are traced through Spain into North Africa, though not confined to either of those regions. Four species are known among the mountains of the Caucasus and four again in Northern Asia, one kind extending through the arctic regions into North America. A large and distinct group belongs to the Himalayas and reaches thence to China; of these about thirty kinds have been described, of which a few have reached our gardens, but the larger number are not in cultivation. A few of the European species, such as *A. villosa*, are also found in the Himalayas, but they differ from the more compact and tufted western forms. One kind lately intro-

duced is said to come from the extreme of South America, and is interesting as being the first from that region. The Androsaces may be divided into two groups; one including such easily grown kinds as *A. lanuginosa* and *sarmentosa*, which grow in open soil with other plants upon the mountain side; and a second group forming stemless tufts and found only in rocky clefts. Those of the first group will often thrive in level borders of free soil, and root from cuttings, or division; the mossy kinds are happy only upon the rocks and are raised solely from seed. The following list gives the best kinds in cultivation and of value for the choicer parts of the rock-garden:—

Androsace Albana.—One of the mossy kinds, forming small rosettes of deeply-toothed oval leaves and dense heads of pale pink flowers from April to July. A plant newly introduced from the Caucasus and still rare in gardens.

A. alpina.—A gem in the rock-garden but not easily grown. Its tiny tongue-shaped leaves are in crowded rosettes, forming cushions of 2 or 3 inches high covered in June with flowers—one from each rosette—rosy-purple with a yellow centre. It needs peat soil, moisture at the root, and a rather shaded spot; its leaves should be kept dry by planting in a wall or between upright stones. Syn. *A. ciliata*.

A. arachnoidea.—Though classed as a species in the Kew list many authors regard this as a local form of *A. villosa*, from which it differs in its denser hairiness. Mountains of the Della Torre in Eastern Europe.

A. brigantiaca.—A pretty plant thriving only in sandy or granite soils and upon slopes shaded from strong sun. It comes very near *A. carnea*, but with leaves of deeper green, and pure white flowers.

A. carnea.—One of the best kinds, early in flower, free, and easily grown in light soils without lime; being less dense and woolly than many sorts it is not so apt to “damp off” in winter. It does not form rosettes but little spreading shoots covered with narrow pointed

leaves of grey-green almost like a twig of Juniper, and heads of rosy or pink flowers with a yellow eye. Water freely in dry weather, and shelter from the fiercest glare in summer. Alps, mountains of Auvergne, and Pyrenees, from 6,000 to 8,000 feet. Syns. *A. Lachenalii*, and *puberula*. Seeds, sown as soon as ripe.

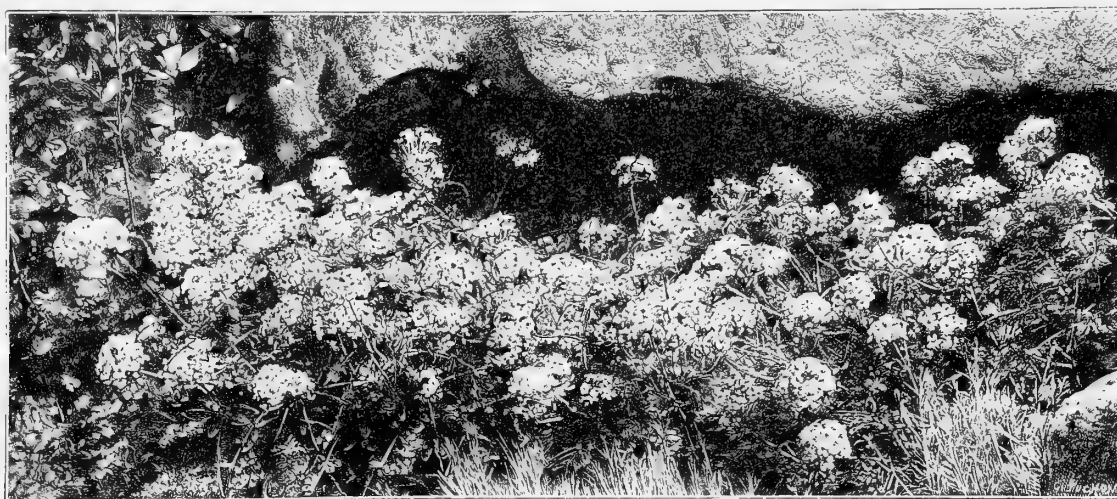
A. carnea var. *eximia*.—A form of the last, hardier, more robust, and with larger flowers. It grows quickly into tufts 3 inches high and 6 or more across, if encouraged by dressings of light and gritty soil into which the prostrate shoots send roots from the under side.

A. caucasica.—A pretty little plant, new as yet, and hardly known. Narrow leaves in dense rosettes, with heads of bright pink flowers upon very short stalks, during summer. Caucasus.

A. Charpentieri.—A distinct kind and one of the neatest of alpine plants, free in flower, and of strong growth in sandy soils. Rosettes

rounded cone-like columns less than an inch high, covered thickly with hairs, with white flowers nestling in the centre during April and May. Summits of Oule de Marboré, Upper Pyrenees. Syn. *A. frutescens*.

A. foliosa.—One of the Himalayan kinds, beautiful in flower, and of free growth when well established, making tufts a foot across in one season. The leaves are not crowded into rosettes but are large and distributed upon erect or trailing stems, green rendered grey with pale hairs, and turning reddish-purple in the autumn. The rosy-red flowers come upon long stems from June to September, and are large and carried in big clusters sometimes of fifty flowers, lasting for a long time in beauty. They often change prettily in colour with age, and, as in certain Primulas, other small heads are sometimes thrown up from the centre of the first cluster. In good years seed ripens, and the



ANDROSACE SARMENTOSA.

(Engraved on wood for "Flora" from a group on rock-garden at Friar Park.)

of tiny, downy leaves in crowded masses, and rich rosy flowers hardly rising above the leaves in June and July, after other kinds have done flowering. Thrives best in crevices of sandstone or granite rock, facing south-west or sheltered from fierce sun. Seed. Alps above Lake Como. Syn. *Aretia brevis*.

A. ciliata.—A scarce plant from the Pyrenees, growing in small, dense columns of deep green leaves fringed along the edges, and crowned in April and May by large stemless flowers of bright rose. Granite soils.

A. cylindrica.—Though classed as a species this little plant is very like the last and comes from the same region. It forms mossy tufts of

plant is easily grown from cuttings taken in autumn and rooted in a cold frame during winter, or from offsets struck singly in small pots. The plant grows in deep limestone soil, made light with leaf mould and grit, and mixed with plenty of broken fragments; it does best in full sun, with abundant water to the root in summer. Western Himalayas.

A. glacialis.—In its wild state one of the most beautiful, growing in loose flat tufts of branching stems clothed in downy leaves, and covered during early spring with flowers of vivid pink paling to white. Does best in clefts of sandstone rock, in full sun. Alpine summits (always granite) at 6,000 to 9,000 feet. Seeds.

A. Hausmanni.—A species coming very near *A. helvetica*, but of looser habit and flowers of soft pink. Summits of the Tyrol, at 6,000 to 8,000 feet.

A. Heerii.—A very rare plant found only upon the Martinsloch in Switzerland, and a supposed cross between *helvetica* and *glacialis*. Tiny saucer-shaped flowers of bright red, and intermediate habit. Syn. *A. bryoides*.

A. helvetica.—A charming plant of the mossy section, growing in neat rounded cushions of grey-green, composed of fine hairy leaves set in rosettes, from the centre of which a lovely white flower with a yellow eye is put forth during spring. The flowers are so large as often to overlap, and their combined effect like a beautiful white-flowered shrub in miniature. Succeeds only in gritty soil and partial shade, planted between limestone rocks closely set and deeply buried to secure moisture and drainage at the same time. Limestone summits of the Alps and Carpathians. Seeds.

A. Hookeriana.—A new and little known species from the Himalayas of Sikkim, Lachen, and Donkiala, at a height of 15,000 feet. Though hardy, it is very apt to damp off in our winters and should be planted in a mixture of peat and sand among rocks sheltered from wet. It has neat rosettes of oval, shining green leaves, and in spring, large deep pink flowers in small clusters.

A. imbricata.—Pretty in leaf and flower, coming very near *A. helvetica* but of denser growth, leaves narrower and silvery white with fine hairs, and white flowers set off by a bright rosy eye. Grow in granite or sandstone grit in full sun. Syn. *A. argentea*. Seeds.

A. lactea.—A free, strong-growing plant, making rosettes of shining green leaves, and in spring large white flowers with a yellow centre, in broad loose clusters of five or six. Easily grown in light limestone soil, in full sun or partial shade. Seeds. Limestone rocks from 3,000 to 4,500 feet, from the Cevennes, through the Alps into Austria. Syn. *A. pauciflora*.

A. lactiflora.—A biennial species from Siberia, raised from seed in autumn, wintered in a cool frame, and planted out in spring. The flowers, of white or pale blue, are borne in large loose clusters of pretty effect during summer. Syns. *A. coronopifolia* and *alismoides*.

A. Laggeri.—A Pyrenean kind, with clusters

of narrow pointed leaves, and flowers of bright pink paling towards the centre, gathered into showy little heads of six or eight. Very hardy, it is one of the earliest alpine flowers to open, starring the cheerful green tufts like a miniature Thrift. Sandy soil in partial shade, and no lime. Seeds or cuttings.

A. lanuginosa.—A lovely plant with trailing silvery shoots, leaves covered with silky hairs, and flower clusters of soft rose colour. It does best in warm places near the sea, planted in sunny corners of the rock-garden, and left to trail its silvery tufts in little cascades. Where the soil is free and not wet in winter, it thrives as a border plant; where too heavy, it may be grown on "dry" walls against moist earth banks. It has a long season of flower even lasting into October, growing best in south and west aspects, in sandy soils (or even chalk), with a glass shade in winter. Seed (which ripens only in good years), layers, and cuttings. Western Himalayas, from 7,000 to 10,000 feet. A good form of this is *Leichtlini* (syn. *oculata*) with larger flowers of deeper colour with a conspicuous eye.

A. macrantha.—A rare kind from Armenia, with rosettes of narrow, horny-tipped leaves, and clusters of large pure white flowers, borne upon stout stems.

A. magellanica.—A new species from South America, not yet flowered in this country; it is like *A. cylindrica* in growth, with pure white flowers.

A. maxima.—Unlike others of the group this is a lowland plant, growing in mountain valleys of France, Switzerland, and the Pyrenees. Flowers white, with a yellow throat.

A. obtusifolia.—A good plant, robust and easily grown, with large rosettes of spoon-shaped leaves fringed by fine hairs, and short downy stems carrying from one to six white or rosy flowers with a yellow eye. It is nearly 6 inches high, and may be gathered by the handful upon the alpine slopes at midsummer. With us it flowers earlier, planted in peaty soil and in full sun. Alps and Carpathians. Syns. *A. aretioides* and *brevifolia*.

A. pubescens.—A mossy kind with leaves turning reddish-brown in autumn. It may be known by a small swelling on the very short flower-stem, just below the flower. These are white, rather large, with a faint yellow eye,

and come singly just above the little cushion of hoary leaves covered with star-like hairs. It is a lovely little plant, pretty at all seasons, of easy culture in crevices of sandy soil. Alps.

A. pyrenaica.—One of the same mossy group, with tiny grey rosettes in dense tufts, one flower from every centre, white like *helvetica* but less pure, not so well formed, and upon short stems. It is not easy to grow well but does best in deep fissures between upright rocks; it may also be grown on the flat, in peat and sandy loam between buried stones. Central Pyrenees. Syn. *Aretia pyrenaica*.

A. Raddiana.—A biennial species from the Caucasus, worth growing for its rosettes of finely toothed leaves, and heads of pretty rosy flowers. Seed.

A. rotundifolia.—A Himalayan plant rarely well grown in gardens, very distinct, with rounded kidney-shaped leaves, deeply cut at the edges, and flowers of lilac or dull purple in crowded heads. Nepal. Syns. *A. cordifolia*, and *incisa*. A form known as *macrocalyx* is more robust, softly hairy all over, with heads of pale rose flowers and a spreading calyx.

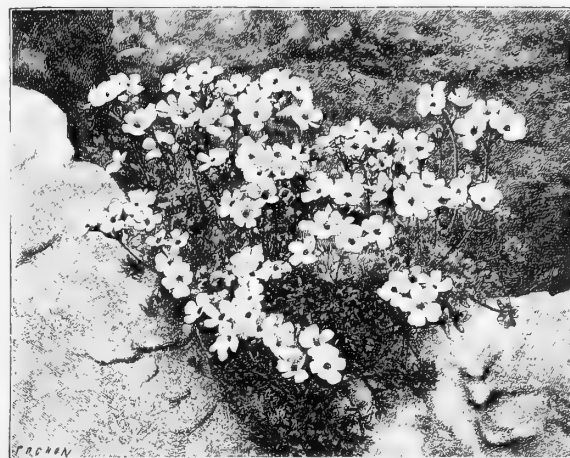
A. sarmentosa.—A useful and pretty rock-plant from the Himalayas, with several forms linking it with others of the Indian kinds. Its leaves are silvery with hairs, arranged in dense rosettes, from which spring a few larger spoon-shaped leaves around the base of the flower-stem, and slender runners which spread and root in all directions. The flowers are in heads of ten to twenty like a little rosy white-eyed Verbena. This kind spreads fast, when kept from damping by a layer of fine stones under the shoots and a glass shade in winter. It thrives in free limestone soil, firmly wedged between masses of rock in a sunny spot. The runners are easily layered and detached when rooted. There are several named forms, including *grandifolia*, *Watkinsi*, and *primuloides*, but only the last, with pretty pale lilac flowers, appears to be in cultivation. The plant usually known as var. *Chumbyi* is now classed as a cross between *sarmentosa* and *villosa*. It is of stouter habit, rooting quite as freely from runners, less apt to damp, with flowers of deeper colour and a crimson eye. Himalayas.

A. sempervivoides.—A rare plant, pretty, easily grown, spreading by runners, and bearing clusters of pink or purplish flowers upon a

stout stem in May and June. Its tiny leaves curl in dense cone-like rosettes, at times only half an inch across, but often larger in gardens; the new shoots only take this curled form as they mature. This is one of the best of the Indian kinds, quite hardy, and growing well upon mounds of granite soil packed with stones. Kashmir and Western Thibet, at 11,000 feet.

A. septentrionalis.—A biennial species and another of the few kinds found at lower levels among the eastern Alps. Small flowers of white or pink, with yellow throat.

A. strigilosa.—A quaint plant newly introduced from China, with a dense rosette of rigid, spiny leaves, and heads of pretty pink flowers in May. It yields no runners and few offsets, but may be raised from seeds and grown in rich peaty soil, well drained, and in full sun.



ANDROSACE VILLOSA.

A. villosa.—A plant of wide range, from the Alps and Pyrenees eastward to Kashmir and the Himalayas, where it occurs at elevations of 12,000 to 17,000 feet. The western form is tiny, with neat rosettes of shaggy leaves so thickly set with white or pale pink flowers that for the time the plant lies hidden. The Indian variety is of larger growth and blooms later, its leaves silvery with long white hairs, and loose heads of flowers with a raised ring of darker colour at the centre. Well grown this is a gem upon sunny ledges in the rock-garden, planted in rich free soil, with lime rubble and sandstone fragments to keep it well drained; it will also do well in flat borders when the ground is prepared. The downy leaves need shields of glass in winter. Syns. *A. capitata* and *penicillata*. Seed and runners.

A. villosa var. *Chamaejasme*.—A pretty

little plant known as the Rock Jasmine, inhabiting a vast range through Europe, Asia, North Africa, and the Arctic regions. Though like *villosa* in flower it differs in leaf and habit, with a branching rootstock, spreading clusters of fringed leaves, and stout flower stems several inches high bearing three to six flowers. These change from white to yellow, pink, and crimson, opening from May to June according to season and latitude, and borne in long succession. It is one of the best and easiest of rock plants to grow in open soil, mixed and surfaced with broken lime rubbish or slate dust, thriving in full sun. It should be watered freely in dry weather to keep away red-spider; it flowers well in pots in a cool house. There are several distinct forms:—*Uniflora*, from the Himalayas, has only one or two flowers upon its short stems; and *coronata*, from a height of 16,000 or 17,000 feet in Western Thibet, differs in its dwarfed growth, and flowers with a dark eye. Seeds.

A. vitaliana.—This is no longer classed as an Androsace, being now known as Douglassia; but its changes from Aretia to Primula, Gregoria, and other groups, have been so many that it is doubtful whether this newest name will last. It is a pretty rock-plant, like a tiny Furze bush hardly an inch high, with silvery leaves dusted over with white powder, and many flowers borne singly—large for so small a plant—in March or April, of a fine yellow. It is useful with plants of this group, thriving under the same conditions, and distinct in colour. Disliking dry or heavy soils, it does best in full sun, set in buried stones and free sandy loam mixed with pebbles and heath soil. Runners, and seeds. Alps, Pyrenees, and Sierras of Spain.

A. wulfeniana.—A scarce plant with leaves densely hairy and deep rosy flowers upon short stems just topping the leaves and completely covering the dense cushion-like mass. Soil, sand and leaf-mould in half-shade; should be freely top-dressed at intervals. Granite rocks of the Tyrol. Seeds.

THE LION'S TAIL (*Leonotis Leonurus*).—Messrs. Veitch of Chelsea send us this fine old plant covered with bloom, showing how well it will flower in pots at this season, when the greenhouse is none too gay. Its colour and form of flower is so good and distinct that its neglect is strange.

FLOWERING CRABS (*Pyrus*), WITH A COLOURED PLATE OF PYRUS NIEDZWETZKYANA.

FOR their beauty, hardiness, and easy culture few trees are better than the wild Apples of Asia and America and the small-fruited garden varieties raised from them. Yet planters have been slow to adopt them, and in too many gardens, crowded with weedy evergreens and distorted conifers, these trees so charming in flower and fruit are still unknown. The small-fruited sorts are often the best in flower and in the rich colour of their fruits, and for the garden few things are more charming than a group of these miniature Apples, beautiful in flower during spring and in autumn showy with fruit. In some kinds these hang far into the winter, or they may be cut for the house when the last outdoor flowers are on the wane. Far too little is made of the Crab Apple for its beauty in the picturesque garden where it flowers freely even in partial shade, the effect of a well-placed tree in spring-time being to quite light up the little glades in the pleasure ground. In rich soil beside water, or drooping from a stream bank, few flowering trees are more graceful in outline, while planted in double rank to form a narrow shaded walk—such as is common in gardens of Japan—there are no better trees than standard ornamental Crabs. The kinds are varied as to size and habit, some making trees of 30 feet with a spreading head, and others rarely rising higher than a low bush; many droop prettily upon reaching mature form, and two or three are true weepers of charming effect



PYRUS NIEDZWETZKYANA.

for the lawn or shrubbery. To enjoy to the full their rich autumn colour, full sunlight is needed, and certain soils also exert a marked influence in this way, those loams reddened by iron or red sandstone yielding fruits of high colour, while upon other soils the fruit may be less brilliant spite of much sun and care in feeding. Several fine kinds have found their way to us of recent years from China and Japan and others have been raised in nurseries, but for brilliant colour none is better than the kind newly introduced from Turkestan and shown in our plate. Its one fault is the name with which science has afflicted it. Otherwise, the rich crimson of its flower clusters, recalled in autumn by the intense colour of its fruits, make it one of the most distinct and beautiful of ornamental Crabs.

Among the many kinds differing in aspect, habit, and beauty, without personal knowledge it is not easy to choose those best for any given purpose, so that a short review of best kinds may be useful to the planter. For grouping in wooded glades the varieties of *baccata* and *prunifolia* are best, or if smaller trees are wanted, the Chinese, Garland, and Hall's Crabs, are all good. Dwarfier kinds of rich colour such as *floribunda*, *Halliana*, and *Schiedecki* are better in the open, and the dwarf forms of *Ringo* and *Toringo* from the mountains of Japan, are quite at home on banks or slopes of the rock-garden. The kinds nearest evergreen are the Garland and Narrow-leaved American Crabs, with *Toringo*, *melanocarpa prostrata*, and *niedzwetzkyana* best for autumn leaf-colour. The double and semi-double varieties of *co-*

ronaria and *spectabilis*, with *Halliana*, *Tenorii*, and *Schiedecki* have the longest season of bloom, the late and scented flowers of *coronaria* being the largest and most lasting of all, with the single flowers of *Kaido* about second for size. The young leaves of *Pyrus Halliana* and *niedzwetzkyana* are reddish-purple in their early stages, and the fruits of the last unlike any others in shape and character. For pale masses of flower the old tree-like forms are best, and for vivid colour the newer kinds such as Hall's and Spath's Crabs, *Pyrus niedzwetzkyana* and the dark form of *floribunda*. As they grow old the lower branches of many kinds droop gracefully earthwards, and two weeping kinds are *prunifolia pendula*, and *Elise Rathke*—an Apple of fine effect where its branches can trail freely.

Household Uses.

Though not to be compared with orchard kinds the finer Crab Apples are of value for their fruit, and there is an increasing call for fruiting Crabs even where the ornamental kinds are neglected. These little fruits, so fragrant and highly coloured, are pretty upon the table, and their crisp juiciness and acid flavour is often welcome as a change for dessert. Many kinds are now used in this way, and among the best are the *Dartmouth* and *Transcendent* Crabs, the *Fairy Apple*—of fine colour and good flavour, and *Montreal Beauty*—a favourite Canadian kind. For their later fruits the *Lady Crab*—medium late, the *Chicago*, the *Striated Crab*, and *Tardive d'hiver* are all good. For preserving their uses are varied; boiled to a paste from which the

cores are cleared by pressing through a sieve or cloth, the pulp makes a good sauce for game, or delicious puddings of distinct flavour. With more sugar, the same paste may be made into jam or thickened as conserve, or the fruits may be preserved in syrup as a sweetmeat. Perhaps their greatest value is for jelly, and for this the fruits should hang until mellow, whereas for eating they are best while crisp and fresh. Pink and clear jellies may be had from a wise choice of kinds, of which *Late Red Siberian* and *Dartmouth Crab* yield a pretty colour, while such as *John Downie*, the *Fairy Apple*, and *Transparent* give a clear jelly. A refreshing drink for thirsty colds or the sick room generally may be made by pouring boiling water over the cooked fruits, lightly mashed.

Few groups have given botanists more trouble than this, and no two authorities are ever quite agreed as to the classing of forms and hybrids of uncertain origin. For ease of reference it is well to follow the division of the order *Pyrus*, by which the forms of Apple are classed together in the section *Malus*—a group large and distinct enough to save confusion with other sections. Where uncertainty as to species occurs it will be briefly noted in our list of kinds; the many garden varieties with fancy names, many of which have come to us from America, are classed apart with brief descriptions.

NARROW-LEAVED CRAB (*Pyrus angustifolia*).—A low tree of 15 or 20 feet, often called the Evergreen Crab from the fact that its narrow shining leaves remain all through a mild winter. The flowers, borne in clusters during May and June, are red in the bud, expanding to a pale blush, and very sweet; the fruits are small,

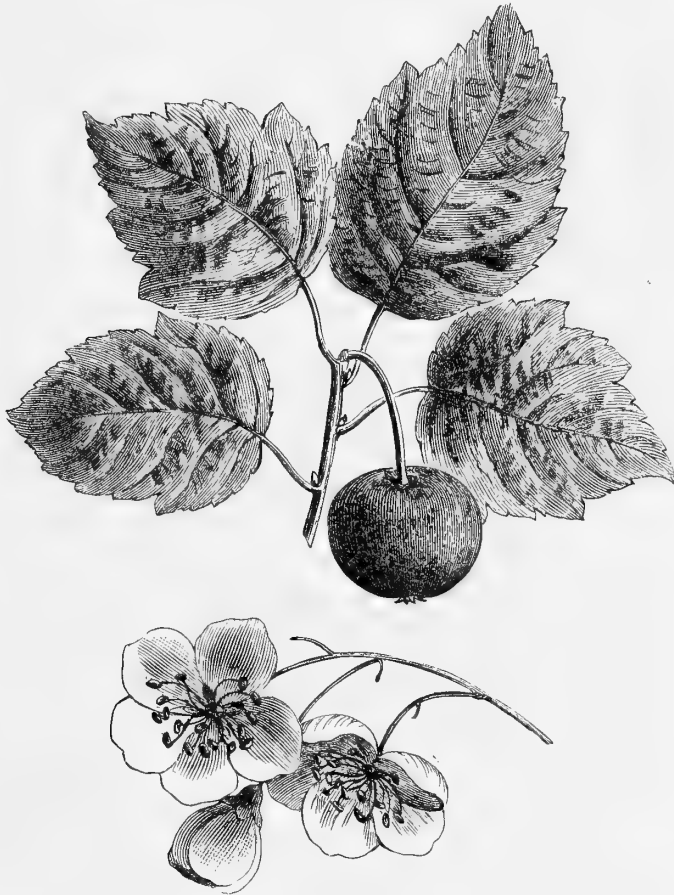
green, and intensely sour. This is one of the old American kinds, in cultivation since 1750, and now too rarely seen in our gardens. It grows in the low woods of Carolina, coming near the Garland Crab (*P. coronaria*) of which it is often classed as a variety, and to which the double-flowered form of this more correctly belongs. Syn. *P. sempervirens*.

THE RUSSIAN CRAB (*P. astracanicus*).—A tree found wild in southern Russia, varieties of which have long been grown under the name of Red and White Astrachan Crabs. The Red Astrachan bears fruit of a bright red with delicate purple bloom, and the White kind is known in English nurseries as the Transparent Crab. It makes a pretty tree, with yellow wax-like fruits and a beautiful bloom.

THE SIBERIAN CRAB (*P. baccata*).—This is one of the tallest of the wild kinds, reaching 30 to 35 feet in its pyramidal forms. It is a stately tree for lawns, or grouped among tall trees in glades of the pleasure garden, distinct in its long-stemmed drooping flowers, and when laden with clusters of tiny fruits in autumn. Its leaves are oval, sharply pointed, hard in texture, and long in the stalk. The white flowers come in April and May and are scented in some forms; the small pea-like fruits are of brilliant red and yellow, hanging long after the leaves, in mild winters even into the new year. These fruits, however, vary in size in the many forms of *baccata*, those coming nearest *prunifolia* bearing berries like a large Cherry. The forms of this species may be known by the absence of the "eye" from the top of the fruit, formed by the dry and persistent calyx; in this species it falls off during growth, affording an easy means of identification. Covering a vast area from Siberia and the Himalayas eastward, and long grown in the gardens of China and Japan, its wild and garden forms run into other species to the despair of the botanist. Some authors have classed the many intermediate forms together as the Cherry-fruited Crabs (*P. cerasifera*) and much difficulty is thereby avoided; others class them all with this kind or *prunifolia*. The tree known as the Winter Crab, or Bigg's Everlasting (*P. borealis*), really belongs to this intermediate class. It is of robust growth, with a dense head and pretty drooping habit, carrying its leaves and bright red fruits nearly all winter. There is another

variety with graceful drooping outline known as *baccata pendula*.

THE GARLAND CRAB (*P. coronaria*).—The wild Crab Apple of America, found as a shrub or spreading tree up to 25 feet in height, growing in sunny glades and uplands from New York, westward to Kansas and south to the Missouri. Though now not often planted, it is worth growing for its fragrant leaves, flowers,



and fruit, and useful for its late bloom. Its leaves are unlike other kinds in their broadly three-lobed outline, are late in coming, and remain during a great part of the winter. The pale pink or rosy blossoms hang in thick clusters with a scent of violets, and are later than in any other kind; the fruits (also late in coming) are small and flattened, of yellow-green, borne upon long slight stalks, and hollowed at both ends like an orchard Apple. Under cultivation they gain in size and flavour, and are then used for cider and preserves. The early settlers made use of the wild fruits after covering them with earth, to sweeten. Several varieties are grown, the best with large double flowers 2 inches across, with folded inner petals of soft rose;

they open late when the tree is in full leaf, and last longer in beauty than any other kind.

THE HAWTHORN CRAB (*P. crataegifolia*).—A curious little tree with soft silvery leaves like those of the White Beam Tree, and white flowers upon red down-covered stalks. The fruits are very small, and crimson and yellow, or reddish-purple in colour. Found in the woods about Florence, and more interesting to the botanist than the gardener.

THE FLOWERING CRAB (*P. floribunda*).—One of the most beautiful of flowering trees, slender and spreading in its growth, with long shoots almost hidden in flower during May. The buds are of glowing crimson fading to a soft pink or white as the flowers open and mature, the same spray showing a charming blend of colour. The fruits are red and yellow of the size of a pea, and fall sooner than the small-fruited Siberian Crabs. This kind never grows much above 15 feet, is of graceful habit, blooming well while quite young; a further merit is its easy increase, cuttings put firmly into the ground during autumn or early winter seldom failing to root. Grown in pots it bears gentle forcing, and its coral-red buds are often welcome for the greenhouse in early spring. Japan. This tree has been supposed to belong to *P. baccata* or *P. spectabilis*, but whether a true species or only a variety so distinct a kind may well stand on its own merits. Several forms are grown, the best being *atrosanguinea*, with flowers of dark crimson. Others are *citrifolia polypetala*, a hybrid with white flowers and yellow fruits; *fructo-flavo*, with deep red flowers and yellow fruit; and *Nikita*, a Japanese cross, with larger edible fruits of a pale straw-colour.

HALL'S CRAB (*P. M. Halliana*).—Another handsome Japanese kind, growing as a bush or small tree of 15 feet, with a broad open crown of good outline and graceful proportions. Its semi-double flowers appear early upon long red stalks, and while fewer than in *floribunda* their colour and long season make it a very pretty shrub. The fruits are hardly larger than a pea, ripening late, and of soft reddish-brown like the bark, the young shoots, and the leaf-stems. Japan. Some botanists class this as a semi-double form of *floribunda*, and others as an offshoot of *baccata*, but no doubt exists as to its beauty for gardens, where it is fast becoming better known.

THE PRAIRIE CRAB (*P. Ioensis*).—A small tree from the Western States of America, abundant in the flat lands of river valleys. Its irregularly-toothed leaves are covered beneath with reddish down, extending to the stems of the rosy flowers and to the floral organs. The fruits, of dull green covered with pale dots, are angular, greasy to the touch, and very sour; they ripen late and are gathered by the settlers, though not considered worth cultivation. A variety of this with double flowers of deeper colour is known as *Bechtel's Crab*—a better garden tree than this wild form of the backwoods. Some authors regard *P. Ioensis* as a variety of the Garland Crab (*P. coronaria*).

THE COMMON CRAB (*P. Malus communis*).—The Wild Apple, with its pink and white flowers and varied forms of fruit covers a wide area in Europe and Asia. Beside its geographical forms it has been cultivated from remote antiquity with the results seen in our large-fruited varieties, for which the wild tree and one of its dwarf forms, *M. paradisiaca*, are used as stocks. Its garden forms are in the main more curious than beautiful, and include the Bloomless Apple (*P. dioica*) with strangely imperfect flowers, and a number of variegated and distorted forms of no value. The best garden form is *pendula* (or *Elise Rathke*), a pretty weeper, most useful as a standard for shrubberies, where its beautiful flowers and large highly-coloured fruits give fine effect. *Translucens* is a form with double flowers, and the large single flowers of *paradisiaca* are not without beauty. The common form of our woods is as pretty as any in its bloom.

THE BLACK-FRUITED CRAB (*P. melanocarpa*).—A tree of medium size and remarkable only for its small black fruits, not without beauty for autumn decoration but of no other value. It is the Black Borsdorffer Apple of the Germans, and its prettiest form is *prostrata*, in which the quaint effect of the berries is enhanced by rich autumn tints of crimson and bronze.

THE RED CRAB (*P. niedzwetzkyana*).—A new and very distinct Crab from the Caucasus and Turkestan, where it has been cultivated for many years. Its flowers, well shown in our plate, are the deepest in colour of the whole group, and the fruits are also of intense crimson. Even in winter the bark and twigs are conspicuous for their ruddy purple colour, and on

first appearing the leaves show the same redness, becoming deep green with red veins when mature, and fading again to reddish-purple in autumn. It is therefore known as the Red Apple throughout Central Asia. The fruits ripen during August and are cone-shaped, of good flavour, and of such intense colour that even the flesh is stained a deep rose-red. It is a small free-growing tree of proved hardiness in the south of Britain, where it flowers and fruits freely, and is a striking object at all seasons. It is met with throughout central Asia and bears the name of a Russian traveller who found it in Siberia.

THE CHERRY CRAB (*P. prunifolia*).—As has been mentioned, this kind is so linked to *baccata* by intermediate forms as to be scarcely separable from it, and many botanists are giving up the attempt to keep them apart. The flowers are white, followed by fruits of bright purplish-red, and the size of a cherry. Old trees are of fine appearance in the spring and autumn, and when planted in the open 30 feet in all directions is no unusual measure. There are many garden forms, the most distinct being that with double flowers, and a pretty weeping tree—*prunifolia pendula*.

JAPANESE CRAB (*P. Ringo*).—Though classed apart, it is doubtful if this scarce Japanese tree is more than a variety of *spectabilis* or *Toringo*, to both of which it has been joined by certain authors. It is a low tree of straggling habit with no tendency to the dense head of most Apples, and if less neat, the loosely drooping branches fully display their flowers and fruit. The flowers are white flecked with rose, large, and well distributed, followed in October by clusters of oval yellow fruits like cherries, hung all along the branches upon slender stalks and daintily flushed where touched by sunlight. Though coming near *P. spectabilis* it differs in its shrubby habit and more downy leaves. Two recognised forms are *fastigiata bifera* (a probable hybrid) of free growth and better habit, with large rosy flowers, deep crimson while in bud, and often borne twice in one season; and *sublobata*, a leaf variety.

THE CALIFORNIAN CRAB (*P. rivularis*).—A common tree in alluvial soils of the Western Pacific States, reaching a height of 40 feet and forming dense thickets in the river valleys. Its white flowers and green fruits are only of

botanical interest, suggesting an American form of *P. Toringo* (syn. *P. fusca*). A cross between this species and *P. Halliana* has given a pretty little tree known as *rivularis atropurpurea*, with flowers of deep rose; *integrifolia* bears entire leaves, as against the sharply-toothed ones of the parent.

SPATH'S CRAB (*P. Schiedeckeri*).—A beautiful flowering tree raised in Germany about fifteen years ago, and first shown in this country in 1896, when it gained an award of merit. It is a cross between *floribunda* and *prunifolia*, free in flower even for this free-blooming family, its branches wreathed in flower clusters from end to end during May. They are large and semi-double, vivid crimson in bud, opening to shades of soft rose. This kind has not yet attained full growth with us, but is sturdier than *floribunda*, with long erect shoots and deserves to be much planted for its beauty.

HIMALAYAN CRAB (*P. sikkimensis*).—A small tree from elevations of 7,000 to 10,000 feet in the Himalayas, and intermediate between the Siberian and Persian Crabs (*baccata* and *Pashia*). It is woolly in nearly all its parts with reddish-brown fruits covered like the Persian Crab with small white dots.

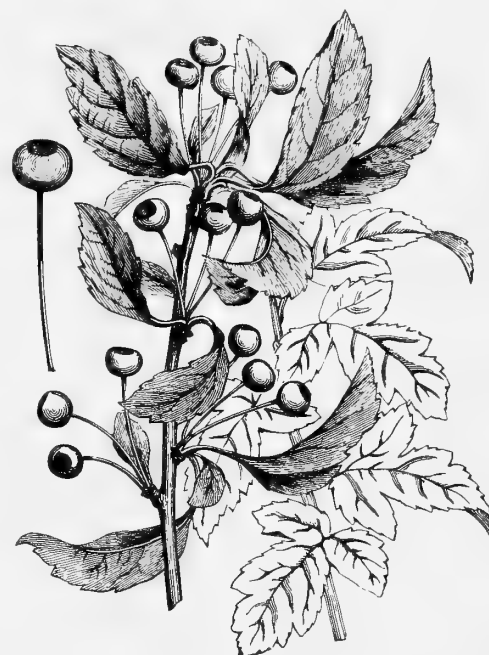
SOULARD CRAB (*P. Soulardi*).—A small tree, woolly in all its parts, with dense clusters of pale pink flowers like those of the common Apple, and large fruits which store well and of fair quality for cooking. It occurs locally in the river valleys of central and western North America as a natural hybrid of *P. Malus* and *P. Ioensis*. Being hardy in the most exposed spots this tree is now grown in several varieties in places unsuited to orchard trees.

CHINESE FLOWERING CRAB (*P. spectabilis*).—A very handsome flowering tree, earlier and of deeper colour than the Apple, seen at its best when open flowers of pale pink mingle with the bright red buds. It reaches 30 feet when full grown, with a dense head of upright branches only spreading when old. Leaves narrow and slightly hairy beneath; fruits greenish-yellow, of the size of a cherry, evenly rounded even near the stalk where there is no trace of the usual hollow, but sour and worthless. It was the first foreign Crab grown in our gardens, introduced from China in 1780, and mostly seen about old houses. Several varieties are grown, of which those with double pink

and double white flowers are best, flowering early and lasting long.

VARIETY KAIDO (*P. spectabilis* var. *Kaido*).—Even amongst growers opinion is divided as to whether this is a Japanese cross or a distinct kind. However that may be, it is one of the best of flowering Apples, profuse in its large rosy flowers (red in their early stage) followed by masses of pretty fruits which hang for weeks and are edible when mellowed. The tree is of good growth and free from the dreaded "woolly blight" of America.

RIVERS' CRAB (*P. spectabilis* var. *Riversii*).—A garden hybrid between *spectabilis* and a form of *P. Malus*. It is a pretty tree with large semi-double flowers of bright rose, deep crimson while in bud, and greenish-yellow fruits speckled with red of the size of a small plum.



FRUITING SPRAY OF PYRUS TORINGO.

THE DWARF CRAB (*P. Toringo*).—A low tree often no larger than a shrub, of loose habit and inclined to straggle, but easily trained as a bush and useful in that form for the front of shrubberies. It is common in the hills of Japan even to a height of several thousand feet, growing beside water and so variable as to include low trailing bushes and trees of 30 feet. In our gardens it is best known and most useful in its dwarf form. The leaves are very distinct, deeply notched, and in some forms three-lobed, with a bright colour in autumn. A large growing form of *Toringo* is

known as *major*; a second, *P. Sieboldi*, is very small and more curious than pretty. A cross between *Toringo* and a double form of *spectabilis* has given *Tenorei carnea pleno* of nurseries.

Fruiting Crabs. The number of these is growing fast with the newer kinds from America, where the Crab is much grown for its hardiness, and much has been done to improve it by crossing with the smaller orchard varieties. Some of the best English Crabs were raised in the same way many years ago by crossing with the *Devonshire Quarrenden*, and fine trees from this strain may still be seen in old Kentish gardens. Of those grown in this country the following are the best:—The *Dartmouth Crab* and *John Downie* are now well known, both of fine colour, good natural habit, and growing well quite into the north. The *Dartmouth* has large fruits of intense crimson with a plum-like bloom, and so many that the trees are often weighed down. *John Downie* is of graceful yet sturdy growth, with large fruits of orange-yellow reddening in the sun and clustered most prettily along the stems; cut branches are fine for decoration and, as this kind flowers late, the crop is seldom spoiled by frost. As in all Crabs, these need little pruning (whether as dwarfs or standards) after the head is well formed, the best fruits coming upon shoots of two years. The *Fairy Crab*, like a miniature Apple, is larger than most in its fruits of lemon-colour prettily flushed, for which birds have such a liking as often to spoil the crop if left too long; very pretty and free, whether as bushes or standards. The Cherry Apple or *Scarlet Siberian Crab* is grown in several varieties with

fruits early, late, and of different sizes. Cherry-like, they are borne in clusters upon long stalks during September, with juicy flesh and pleasant acid flavour; the trees are of pretty open form, but liable to mildew. The best variety is *Cheals' Scarlet Siberian*, with fruits of fine colour and very numerous, upon a tree of upright growth and better foliage. The *Tartarian* or *Yellow Siberian Crab* makes a pretty tree with medium fruits of light yellow and good in contrast; these two Siberian forms gave the start for all the garden varieties. The *Orange Crab*, raised by Saltmarsh of Colchester, bears bright yellow fruits larger than the Siberian, while the new *Oblong Crab* is a form of this with long-shaped scented fruits of good flavour. *Transparent* is an old kind making a fine tree, with fruits of clear yellow flushing in the sun, of translucent flesh and pleasant flavour. *Transcendent* is a newer American tree of fine appearance, with large red and yellow fruits. *Montreal Beauty* (or *Mammoth Crab*) is one of the older American kinds, as is also *Coral*, a pretty tree in form and in fruit—these of medium size with a strong quince smell. Useful as a later sort is the *Lady Crab*, with reddish fruits of good size and quality speckled with white dots; still later is *Chicago*, with yellow fruits striped with rose upon the sunny side. Other pretty kinds are *Paul's Imperial*, raised at Waltham; and *Malakovna*, a little known variety very good in dwarf form, with large fruits of bright scarlet. There are a number of new American kinds, but so far they do not seem to have won a good character in this country.—B.

CHILIAN CORAL PLANT (*Berberidopsis corallina*).

THIS lovely evergreen never fails to excite admiration during the early days of autumn in the few gardens in which it is to be met. Like many of the Chilian plants it is a little exacting as to climate, and neither quite at home under glass or in the open in some parts of the country, but with care as to position and soil it may be grown outdoors almost anywhere in the south, and in a cool house, or better still in a temporary house, in the northern parts of Britain. It delights in the soft moisture-laden air of the south-west, but fine plants are not wanting upon the hills of Surrey, Sussex, and districts further east, where they have lived unprotected for many years. Of trailing habit, it is often trained to walls, though where it can be sheltered during winter it is far prettier left to ramble over rocks or tree-roots in half-shade, its spiny leaves and rosy-coral buds of wax-like texture charming in their effect. The finest plant in the country is probably that at Crag-side, in Northumberland, where it covers 20 feet of a north wall with hundreds of flower-clusters at a time from July into October. With many other half-hardy plants it is protected in winter by lights which are taken away in spring, allowing full exposure until the following autumn. In cold districts this is quite the best way of growing this and many other tender plants, which often languish if confined in houses through the summer. Not but that it will do well in an airy house, trained under the roof to hang freely, and sheltered from strong sun and too

much heat, which stunt its growth. Though not difficult as to soil it is averse to much lime, thriving in light loams enriched with peat or leaf-mould and rotten manure; good drainage is important and best secured by a layer of stones and the addition of sand. From the various aspects tried by successful growers a north wall seems to suit it best, and thus sheltered its flowers last



THE CHILIAN CORAL PLANT (*BERBERIDOPSIS*).

a long while; south-west and south-east walls are next best, avoiding aspects too much exposed to the sun. Plenty of water should be given in summer and syringing during dry weather is also a help, with a good mulch of leaves around the base in winter. Being inclined to spread rather than to rise, space might often be found for it in the gaps so often seen

at the foot of high walls through failure of the lower boughs of tall creepers. In such a nook it makes a very pretty object, but should be started with a clear root-run (best secured by sinking a bottomless tub), which is also of importance when planted out to ramble over rockwork. Upon rocks it is best with a groundwork of some hardy evergreen, such as one of the neat, creeping Ivies.

Though so near the *Berberis* group as sometimes to be called the Coral Barberry, this plant is classed apart in a genus of which it is the only representative. Good seed is sometimes produced in warm seasons when free growth is made, and in this way young plants may be raised. It is also increased from cuttings of the soft shoots put in sandy soil in spring, or from layers of ripened wood laid down in the autumn. B.

PRETTY WILD GARDEN EFFECTS.

THESE sometimes come in their own way and surprise us by their unsought beauty. Mr. T. Smith, of Newry, gives an instance or two:—"Nature often steps in and tells us what to do in the matter of plant grouping. This occurred forcibly to me lately when noticing a spreading mass of *Rosa polyantha*, 30 feet or so across, not a close dense mass, but thin in places in which *Mulgedium Plumieri* had planted itself. The effect of the pale blue of this rambling herbaceous plant standing amongst the Roses was very soft and charming. In another and damper spot *Sidalcea candida* was a mass amongst which the *Mulgedium* had introduced itself with the best effect. These are plants which can fight the natural herbage and take care of themselves. Again, a mass of *Spiræa filipendula plena*, with a backing of *Campanula grandis alba* and *Lilium Martagon album* interspersed is good; a rather wild-spreading mass of *Campanula venusta* (the earliest of the *rotundifolia* group) in which some plants of *Papaver pilosum* have introduced

themselves is very good also. A big mass of *Euphorbia lucida*, which has got into *Alstræmeria aurantiaca*, is showy and very lasting." And there is no end to the happy combinations that come in this way by design or by chance. Even the grass and weeds lend a charm to vigorous herbs like the Day Lilies, which look stiff in the garden borders, and are so vigorous that no grass or other herbage interferes with them; on the other hand the flowering grasses add much to the effect of the plants when in bloom. The tall *Mulgedium* named above, though an alpine, is a very rampant grower, overrunning everything if put in rich beds; in the wild garden, by pools, or anywhere among Wild Roses or shrubs it is at home and can do no harm. There are many plants of like vigour which may well be used in the same way, according to the soil and situation. Some plants like the Golden Rods, Knotworts, and stouter Asters do not want any care in that respect, but when we come to deal with bulbs they often show a dislike of certain soils, and that must be thought of.

SONGS OF THE WOODS AND FLOWERS: A UN AUBESPIN.

Bel aubespín verdissant,
Fleurissant
Le long de ce beau rívice,
Tu es vestu jusqu'au bas
Des longs bras
D'une lambrunche sauvage.*
Deux camps de rouges fourmis
Se sont mis
En garnison sous ta souche :
Dans les pertuis de ton tronc
Tout du long
Les avettes† ont leur couche.
Le chantre rossignolet
Nouvelet,
Courtisant sa bien-aimée,
Pour ses amours alléger,
Vient loger
Tous les ans en ta ramée.
Sur ta cyme il fait son ny
Tout uny
De mousse et de fine soye,
Ou ses petits esclorront,‡
Qui seront
De mes mains la douce proye.
Or vy, gentil aubespín,
Vy sans fin,
Vy sans que jamais tonnerre,
Ou la coignée,§ ou les vents,
Ou les temps
Te puissent ruer par terre.
—RONSARD (1584).

* Wild vine.
† Honey bees.

‡ "Are brought forth."
§ An old word for axe.

FLORA

AND SYLVA.

Vol. II. No. 21.]

DECEMBER, 1904.

[Monthly.

TREBAH.

ALONG the southern shore of Cornwall, a district favoured by an exceptionally genial climate, are situated many beautiful gardens replete with rare and tender shrubs and plants, natives of Australia, New Zealand, Chili, Peru, and other foreign climes, growing in robust health, and so attractive yet so diverse are the individual charms of each garden that it is difficult to admit a preference for any. For the natural beauty of its grounds, however, none can excel Trebah, the residence of Mr. E. Backhouse. Distant about eight miles from Falmouth, the house stands at the head of a little valley, which slopes due south down to the blue waters of Helford River, while on the opposite shore rises a wooded hill crowned by the towers of Bosahan. The sloping sides of the valley are steep and irregular in outline and, being well covered by trees, the lower levels are amply protected from both east and west winds. This spot offers a happy home for sub-tropical plants and shrubs, of which full advantage has been taken, with the result that many fine examples of rare plants are to be met with growing with unaccustomed vigour in this sheltered sanctuary. Amongst the trees are a Portu-

gal Laurel 60 feet in height, *Araucaria Cunninghami* 40 feet, *Cupressus Knightiana* 30 feet, a fine Sequoia (*Wellingtonia*), *Picea pungens glauca*, *Picea bracteata*, and an *Acacia dealbata* of 40 feet. The front of the house is covered with flowering climbers, which include *Tacsonia mollissima*—flowering and fruiting freely, *T. Van Volxemii*, *Bougainvillea speciosa*, *Cobea scandens*, *Cassia corymbosa*—which has veiled nearly the whole of a gable-end, and Ivy-leaved Pelargonium *Madame Crousse*, whose salmon-pink flowers have reached the eaves. Of Acacias, besides the large specimens of *A. dealbata*, I noted *A. cultriformis*, 6 feet in height and as much across, on a trellis in the open garden; *A. lophantha*, 12 feet in height and of the same diameter, with a smaller specimen hard by; *A. verticillata*, and *A. longifolia*. A great rarity is a healthy young example of the Cape Silver Tree (*Leucadendron argenteum*), rather under 5 feet in height, which has been out two winters and is making a number of healthy shoots. *Fremontia californica* forms a bush 6½ feet high, and *Lavatera assurgentifolia* a shrub 7 feet in height and as much through. Standing in an isolated position on the lawn is the finest

specimen of *Exochorda grandiflora* that I have ever seen, about 15 feet in height and the same in diameter—it must be a picture in the spring, when white with blossom. A bush of *Olearia macrodonta* 8 feet in height and 9 feet through was in flower at the time of my visit, and was a beautiful sight; other *Olearias* are also grown. Another plant in full bloom was *Boronia elatior* 3½ feet in height, and smaller specimens of *B. megastigma* were also flowering, as was a shrub of *Abutilon Boule de Neige* in the open, and *A. vitifolium*—common in the south-west—was likewise present. *Datura sanguinea* is fully 10 feet high and bears its flowers well into the winter, and a bush of *Sparmannia africana* is 6 feet in height and the same across, while a shrub of *Senecio Greyi* was covered with blossom. Among other flowering trees and shrubs are *Magnolia hypoleuca*, *Drimys Winteri*, *Eucryphia pinnatifolia*, *Buddleia Colvillei*, *Ceanothus* in variety, *Myoporum lætum*—an Australian shrub or tree with lanceolate leaves covered with innumerable transparent spots, *Lagerstroemia indica*, *Viburnum Awafuki* and other Guelder Roses, *Ozothamnus rosmarinifolius*, *Cornus tartarica Gonchaltii*, *Ptelea trifoliata aurea*, *Camellia reticulata* growing in bush form, and *Dimorphotheca Ecklonis*, which had stood in the open unprotected through the winter. The garden contains a fine collection of Rhododendrons comprising almost all the best known species and varieties, a deep rose-coloured form of *R. Aucklandi* (*Griffithianum*) being particularly fine. But the chief point of interest among the Rho-

dodendrons in this garden rests with the fragrant flowered section, which, as a rule, even in the south-west, are grown against walls, being considered more tender than the majority of the species and hybrids, and generally known as greenhouse Rhododendrons. In the sheltered valley at Trebah, however, they have formed great bushes, *R. fragrantissimum* being over 7 feet in height, *Countess of Sefton* and *Gibsoni* 6 feet by 6 feet, *Lady Alice Fitzwilliam* 5 feet in height, and *exonensis* 3 feet high and 5 feet through. The common Azalea also grows amazingly, one pink-flowered bush measuring fully 12 feet across. Of Bamboos there is a fine selection, *Arundinaria nobilis* being considerably over 20 feet in height, *Phyllostachys nigra* has formed fine clumps, and *P. Quiloi* is fully 20 feet high. This Bamboo made 14 inches of growth between Saturday night and Monday morning. Lower down in the valley the groups of Japanese Iris (*I. laevigata* or *Kämpferi*) are especially fine, the stems and foliage being vigorous and the flowers enormous. *Lilium giganteum* also does well here. Tree-Ferns are growing on a sloping lawn and thrown into high relief by a leafy background. *Woodwardia radicans* is finer than I have ever seen it elsewhere, one clump, growing in a sheltered and tree-shaded nook, being over 20 feet across, while one frond that I measured was 9 feet 11 inches in length. *Lomaria magellanica*, which is fairly common in gardens in the south-west, also attains exceptional proportions here. Numbers of Cordylines are dispersed about the grounds, and on a sloping grassy bank

is a large colony of *Furcraea longæva*. In an upper part of the gardens *Crinum Powellii* bears flower-spikes over $5\frac{1}{2}$ feet in height, and a fine form of *Sparaxis (Dierama) pulcherrima*, with flowers of a deep maroon-red, has arching flower-wands almost 7 feet in length. This short account of Trebah gardens must not be considered in any way exhaustive, as the names of many interesting and beautiful things have been omitted.

S. W. FITZHERBERT.

IVY ON TREES.—I agree with "Repton" in thinking that Ivy is not so hurtful to trees as is generally supposed, but not so far as to think that it does not injure some trees even to the extent of killing them, and much depends on the tree it grows upon. On umbrageous trees with foliage giving deep shade, Ivy never makes way enough to do any harm. It is a plant that loves the light, and will not grow fast or well under the branches of a Sycamore or a Beech, for example. With scanty-foliaged trees, however, it is different. Many years ago we had Ivy planted against the stems of the trees in many places, and it has been growing with the trees as they grew. On the Birch it grows fast, and some of these have, in the course of time, been all but covered from bottom to top. We have other trees of the same kind and age and much larger ones also, but they are in good health; these have no Ivy upon them. The Birch, being a scanty leaved tree, the Ivy grows fast upon it and overmasters it. The tree on which it thrives next best is the Larch, and we have old ones of these showing an even and tapering column of Ivy about 70 feet high. They are about eighty years of age, and the Ivy upon them cannot be much younger. On the Ash the Ivy makes some progress, and some of our old trees are clothed to near the top with it, side limbs and all. On the other trees that have good and ample foliage it never makes much headway, and we have no example of it in the Beech worth speaking of. It thrives on Scotch Fir, but on the Sycamore it is either dead or dying in most instances.—J. S.

CARSON'S CLIMBING LILY (*Gloriosa Carsoni*).

WE have had occasion to refer to this new and beautiful plant upon two or three occasions of late (pp. 250 and 330), and are therefore pleased to give an excellent engraving of it from a photograph taken in the Cape House at Kew



GLORIOSA CARSONI.

(Engraved on wood for "Flora" from a plant in Kew Gardens.)

last August. It is less strictly a "climbing Lily" than others of the group, being more often of dwarf growth and self-supporting; its handsome flowers are composed of broad petals which are yellow towards the centre, shading to deep red in their lower parts. A native of East Central Africa.

THE GREATER TREES OF THE
NORTHERN FOREST.—No. 21.
THE MAIDENHAIR TREE (*Ginkgo biloba*).

FROM whatever point of view regarded, this is one of the most mysterious, beautiful, and distinct of hardy ornamental trees. It is of value to planters for its graceful form and foliage, singularly unlike that of any other tree; it interests the botanist as being allied to the conifers yet not of them, differing widely as it does from nearly all in its deciduous leaves, its lack of resin, and its peculiar flowers and fruit; while to an even wider circle there appeals the mystery of its early history, summed up in the fact that—unknown as a wild tree, it is regarded as the last trace of an extinct type of vegetation, preserved to us by its own hardihood and vast endurance from a dimly remote past. True the tree is common enough in the Far East, where it is said to have spread from China to Japan with the Buddhist faith many centuries ago, and is now frequent in the temple gardens and valued for its fruit. Eastern travellers also tell of Ginkgoes measuring up to 40 feet round and of a great age, to be seen here and there in the interior of northern China, but these are all under cultivation, and if yet existing as a wild tree it must be amid the mountain fastnesses of Mongolia and Manchuria, the vegetation of which remain in a great measure unknown.

Towards the close of the seventeenth century the Maidenhair Tree was seen by Kämpfer, in Japan, and was brought to Europe (probably by Dutch merchants) some forty years later, being first planted

at Utrecht about 1730; it was still longer in reaching Britain, where the earliest plants were raised from seed from Japan, and grown upon walls. The two sexes are apart in the Maidenhair Tree and, as a good many years elapse before they mature, it was long before the first tree flowered in Europe in 1795, followed at intervals by others, but all proved to be males and consequently sterile until a single female was found to be growing near Geneva, and fertile trees were at length secured by grafting its shoots upon the male trees established in various parts.

Distinct Beauty. The Ginkgo is beautiful at all seasons in its erect and graceful habit, with widely-spaced limbs at first rising but when mature gently drooping in wide spreading curves. Its appearance is always impressive, the more so in early autumn when the entire tree takes a golden tinge, rendering it yet more conspicuous. When old it frequently exceeds 100 feet in height, with a massive trunk several feet in diameter covered with rough grey bark, deeply fissured. Standing alone upon a lawn there is that in its appearance which singles it out at once from other trees, and, as it is not easily injured by exposure, it may, at least in many places, be planted in a commanding position where its effect is most striking. The leaf is of vivid yellow-green and broadly triangular, in shape very like the blunted leaflets of *Adiantum trapeziforme*, slightly notched or lobed, and thickened around the edges. The flowers are not showy but the fruits, borne freely upon fertile trees, are conspicuous and like a



THE MAIDENHAIR TREE AT PANSHANGER.

(Engraved on wood for "Flora" from a photograph, August 29, 1904.)

small yellow plum but consisting of a pulpy evil-smelling envelope of rancid flavour, surrounding a sweetish kernel like that of the Almond and not unpleasant to taste. When boiled or roasted these fruits are eaten as food in China and Japan, but the smell of the pulp is so nauseous and enduring (even after the lapse of some hours and much washing), that they find little favour elsewhere. The Ginkgo is not a common tree in Britain but is much grown in the United States for gardens and avenues, being careless of soil and aspect and free from disease; when for street planting (for which it is well adapted) male trees only should be used, to avoid the nuisance caused by the profusion of noxious fruit falling throughout several weeks in early autumn. As timber the bright yellow coloured wood has little value, for though compact and capable of high polish, it is soft, brittle, and not lasting.

Culture and Increase.

Perfectly hardy throughout the south of Britain, and even in Scotland when sheltered or upon walls, its growth is at first rapid when under the best conditions, but it is long in reaching maturity and even the oldest plants in Europe have yet to attain their maximum growth. It endures cold, heat, and drought, with equal indifference, doing best in rich free ground with a dry subsoil and suffering in growth and appearance when the soil is heavy and wet. Free from disease and from insect attack it is easily grown, and transplants well even when of considerable size. The best plants are raised from seed, which grows readily when fresh but loses its vitality in a few months; cuttings are often slow to root though giving fair results when of ripe or nearly ripened wood, set in sandy soil under glass during summer and autumn; grafted shoots start as freely as that of any Apple. This ease of grafting makes it a simple matter to secure fertile trees by inserting both sexes upon one stock; many such trees now exist in Europe which seed regularly and abundantly. Fruiting trees are always rare amongst those raised from seed, and are several years longer than the male in reaching flowering size, but even amongst unflowered seedlings it is easy to distinguish the females with certainty by the fact that in autumn they keep their leaves several weeks longer than the male trees. The Chinese are said to raise large and fertile trees rapidly by sowing several trees in a cluster and as they grow so grafting them together *by approach* as to quickly make one large tree.

Spite of their hardiness fine Ginkgoes are not common in English parks and gardens. That shown in the engraving is a finely-grown tree at Panshanger, in Hertfordshire. It is growing in light black loam upon a gravel subsoil, and is about 70 feet high and half as much across, and is said to be one of the oldest of the kind in the country. Its girth is 10 feet at one foot from the ground, or about the same as a fine tree in the gardens at Frogmore. The Frogmore tree reaches 78 feet in height with a spread of 45 feet, fine in outline, and beautiful in colour this autumn; it grows in moist ground near water. The tallest Maiden-hair Tree in Britain would seem to be at Melbury House near Dorchester, where it exceeds 80 feet in height, but its stem is slighter than those just cited. Dorsetshire possesses a second fine tree at Sherborne Castle, growing upon loamy clay to a height of nearly 70 feet and measuring 9 feet at a yard from the soil. Like the tree at Panshanger, this breaks into two great limbs when well above the ground. In the gardens at Longleat is also a fine tree, 71 feet high, 9½ feet round the trunk at a foot from the ground, with a spread of 45 feet; the tree is in fine health, thriving upon stiff clay. These figures compare well with the growth of the oldest tree in Europe, that planted at Utrecht about 1730. Though in perfect health this tree is now only 83 feet high and less than 10 feet in girth, so that much younger trees in the south of England have already distanced this old tree imported by the Dutch.

With such evidence it is not difficult

to establish the claims of the Maidenhair Tree to a place among "the Greater Trees of the Northern Forest." The finest stature and extraordinary beauty of the trees we mention are seen in conditions which exist over a very wide area of our country, and failures are probably accounted for in this way. When a tree is uncommon it often gets into a staggy state in the nursery, and its increase by layers or cuttings is also against success. We can never get a fine tree in that way, and cutting propagators have done much harm to forest trees. There is not the slightest need for these practices, because, apart from the abundance of seed yielded by the tree in its own country, it seeds freely in the south of Europe, and I have seen trees of it in Austria loaded with their yellow fruit. A hindrance to success is placing the tree isolated on grass (which gets all the moisture) or in a hungry shrubbery. I have lately seen one in Derbyshire struggling with gormandising evergreens, and, though fine in its October hues, in a position where it was almost choked. The conditions to ensure success is above all things to get healthy seedling trees, not too large, and for position choose a vale in a sheltered wood; put enough plants in, *i.e.*, do not depend on one or two trees but plant a bold group or colony, so that one can take choice of the strongest as they grow up, putting Larch or other trees between them at first to keep the ground cool, though these can be removed in due time. To establish a group in the pleasure ground

it is best to keep the soil "open" about the trees, that is to say not in grass, using perennials or other flowers to keep the ground cool and the surface green. The culture of the flowers will help the trees until they are large and deep-rooted enough to stand free upon the turf.

*Varieties and
Synonyms.*

Forms of the Maidenhair Tree (of little value) are sold in nurseries, and several varieties find a place in the Kew list. They include an upright form—that used in the States for street planting; a



MAIDENHAIR TREE: LEAF, FLOWERS, AND FRUIT.

slightly drooping form; and two or three with leaves variegated or variously cut. Of these the most distinct is *macrophylla*, a French variety in which the leaves are much larger, measuring as much as 10 inches in circumference, with two to five lobes and minor subdivisions. The name *Ginkgo* has been variously rendered as *Ginko* and *Gingko*, but the first spelling is that of Linnæus and considered correct. Objecting to the ugliness of the name, Smith changed it to *Salisburia adiantifolia*—by which the tree is still known in England—but

this name is condemned by botanists. The rocky beds that immediately succeed the coal period in geology are full of the remains of fossil Ginkgoes, amongst which upwards of sixty kinds have been distinguished, proving that in past ages this family of trees held a large place in the vegetation of the world.—B.

REFERENCES.—Loudon, Arboretum, p. 2094; Gordon, Pinetum, p. 374; Veitch, Manual of Coniferæ, p. 312; Webster, Hardy Coniferous Trees, p. 50; Revue horticole, 1901, p. 206; Bailey, Encyclopædia of American Horticulture, vol. 2, p. 645.

RHODODENDRON YUNNAN-ENSE.*

THE Rhododendrons found within recent years in central China have not only enriched our gardens with hardy kinds of great beauty but have opened new fields to the raisers of garden varieties in a series of plants of a character quite unlike many of those previously known. From the work of Hooker in northern India that region was long considered as the chosen home of the Rhododendron, but of late years this estimate has been modified in view of the discoveries of MM. David and Delavey in Yunnan and Dr. Henry in south-west China. Their gains have proved that the area in Asia covered by the Rhododendron is wider than at first supposed, reaching eastward from the Himalayas, through Thibet, into China and Manchuria. The Chinese Rhododendrons are remarkable for their variety of form, and are so completely distinct from those of the Himalayan region that only one or two kinds, out of more than forty now described, are common to both areas. Though amongst these new species there are many kinds which only interest the

botanist, some are good plants, beautiful in flower, hardier than most of the Indian section, and certain when they become more plentiful to prove of value in our gardens and shrubberies. *Rhododendron yunnanense* is one of these beautiful hardy shrubs which was found by Abbé Delavay upon the mountains of Yunnan, and raised from seeds gathered and sent to Europe by him. The plant first flowered at Kew in April 1897, and has improved with every season, being especially fine this spring when Mr. Moon secured his picture. It is an erect shrub, loosely branching into slender shoots with scanty leaves of dark green, slightly hairy upon the margin and upper side, and covered beneath with dark glandular dots upon a pale grey surface. Its beautifully marked flowers are nearly 2 inches across when expanded, and borne in profusion as little clusters of four to six blooms; coming somewhat late—from the middle to the end of May—they escape the spring frosts which so often spoil earlier kinds. The spray seen in our plate is that of a pale variety of yet finer effect than the original plant, whose lilac-coloured flowers are shown as a small detached cluster. The plant is hardy at Kew, flowers freely while quite small though it promises to make a good-sized shrub, and would appear to be of easy increase from cuttings. It received an award of merit in May of last year when flowers were shown before the Royal Horticultural Society by Mr. Moore of Glasnevin, and its value has been so proved as to assure its place among hardy Rhododendrons.

* With coloured plate from a drawing by H. G. Moon.



RHODOLEILLON YUNNANENSE

EVERGREEN FLOWER BORDERS.

IN some positions evergreen borders are effective, especially near the house, and they should be welcome to many who are sick of the effect of those bare earth borders that the common way of gardening bestows upon us—a quite unnecessary ugliness. Needless, because in our climate so many alpine and rock plants and small shrubs preserve their evergreen look so well through the winter that it is easy with a little thought to form evergreen borders of a lasting and pretty character. These borders, too, being mainly of dwarf plants, form the best carpet in which to grow one's choice early bulbs. Of garden pictures there are few prettier than Crocus, Snowdrops, Scilla, early Iris, or the rarer Narcissi, coming through the Moss-like carpets in evergreen borders. Often narrow evergreen borders are the best things that can be placed at the foot of important walls (meant for climbers), as the common fashion of allowing grass to grow right up to the walls and houses is a bad one and results in injury to the trees. A narrow border cut off with a natural stone edging from the grass or walk, is best; even a border of this size may have many lovely things, from early Cyclamen to the rarer Meadow Saffrons in the autumn. Besides the flowers already named we have Violets, Periwinkles, Carnations, Pinks, white Rock Cress, Barrenworts—charming in foliage, purple Rock Cresses, *Omphalodes*, Iris, *Acanthus*, Indian and other Strawberries, Houseleeks, Thymes, Forget-me-nots, Sandworts, some Gentians, La-

vender, Rosemary, hardy Rock Roses, and many native and other hardy evergreen Ferns in all their fine variety; these are an essential aid in the making of hardy evergreen borders. It would take a long list to enumerate the plants useful for this kind of border, but in many cases we may say the whole family is useful, as in the Mossy Rockfoils (*Saxifraga*), Houseleeks, and Stonecrops; Christmas Roses also, and, where it thrives, *Gentianella* (*G. acaulis*), with the Evergreen Candytufts and dwarf Heath, valuable as they are in flower as well as for their evergreen habit; also the Rocky Mountain Phloxes, Sand Myrtles, and the dwarf Partridge Berry. These plants are not only good as dwarf evergreens, they are delightful in colour, many of them covering the ground with carpets of fresh verdure, not a few being beautiful in flower, and having also the charm of assuming their most refreshing green in autumn just when other plants are losing their leaves or dying down. Along with these numerous alpine and rock plants we may group dwarf shrubs that come almost between the true shrub and the alpine flower—little woody evergreen creeping things, like the Canadian Cornel, the dwarf Rhododendrons of the mountains of Europe and the hybrids raised from them, and the smaller Azaleas.

It is important to secure all the good plants of a grey hue that we can, as nothing is better in effect than carpets of grey like the Lavender Cotton and the dwarf Lavender in dry soils, the Grey Speedwell, the Grey Thyme, the Silvery Bindweed (*Convolvulus cneorum*), Au-

bretia, Alyssum, and many other dwarf grey plants thriving in ordinary soils. Most important of all, however, is to avoid the universal "dotting" way, of one plant in a place with bare earth around each. Most of these plants are of easy increase and the right way is to plant close colonies of them so as to cover the earth—not following any one formula as to number, but grouping so as to get simple effects—not repeating favourite plants everywhere, but holding each kind "together," as in that way they give far better effect and are also more easily looked after.

FILMY FERNS.

(Continued from page 338.)

HAVING dealt in our last issue with the cool section of this charming group, it may be well to close our review by mention of the kinds needing more warmth than is often found in the cool greenhouse, though few even of these require any great degree of heat. Some growers with well-planned ferneries are able to grow by far the greater number of these plants without artificial heat even in winter, for instead of injury a spell of frost often seems to do them good. Valuable collections in which the plants were frozen solid for weeks together during the hard winters of 1879–80 and 1894–95, thawed without loss and grew away merrily, as though refreshed by the unwonted rest; far better indeed than others of the same kinds removed for safety to a heated house. It may therefore be assumed that the Filmies described below need only enough heat to maintain a fairly even temperature, and in this way outside

coverings are of more value than fire heat during the greater part of the year; a few tender sorts are singled out as needing more heat than their fellows.

When used to cover walls the space should be prepared by fixing stout wide-meshed iron wire about 3 inches from the wall and filling the space between with roughly broken peat and sandstone fragments, the whole made very firm. The stems can then be pegged upon this bed, and will quickly spread into a sheet of drooping fronds. A trickle of water from the top of the wall, and passing under the peat, keeps the roots moist and cool; caught again in shallow troughs upon the floor the same water maintains a damp atmosphere in the house. Filtered rain-water is best for sprinkling, for the lime present in spring water is fatal to delicate sorts. Sphagnum Moss is often used in beds for these Ferns as holding moisture without turning sour; before use, however, it should be cleared of woody fragments, which set up dangerous fungus. It is surprising to find how happily kinds will grow together from countries apart in climate and temperature, and when their needs are known the ease with which these Ferns are grown pleases all who take them in hand.

Hymenophyllum abruptum.—A charming plant with tiny fronds seldom over an inch long and half an inch wide; they are broadly oblong with blunt tips, trembling upon fine wire-like stems, the segments cut half across and of shining deep green. Tropical South America and West Indies, spreading as a dense mossy carpet over rocks and tree-trunks. Syn. *H. brevifrons*.

H. asplenoides.—A little Fern with slender creeping roots, fronds of 4 to 6 inches long,

gracefully arched and drooping and deeply cut into wavy segments of glossy apple-green. Seen upon an old stump of Tree-Fern it presents a beautiful appearance with its shining narrow fronds distinct in colour and delicate in form. West Indies and the mainland, from Mexico to Brazil. (See engraving.)

H. axillare.—The prostrate stems of this Fern are branching and very slender; the fronds linear-oblong, twice cut and drooping. A

I have found this to be one of the freest of Filmy Ferns, running its slender thread-like stems into pieces of Fern-stem or decaying wood. Syn. *H. Plumieri*.

H. elasticum.—A beautiful kind from islands of the Indian Ocean, rare in collections and perhaps only a geographical form of the better known *H. hirtellum*. Its fronds are oval, thin and membranous, and thrice cut into deep green segments. One of the woolly section of



GROUP OF FILMY FERNS.

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|-------------------------------------|--|--|
| 1. <i>Trichomanes elegans</i> . | 3. <i>Trichomanes parvulum</i> (see page 337). | 5. <i>Hymenophyllum asplenioides</i> . |
| 2. <i>Trichomanes trichoideum</i> . | 4. <i>Trichomanes membranaceum</i> . | 6. <i>Trichomanes spicatum</i> (Feea). |

pretty little plant, it has the peculiarity of forming side branches through the extension of the barren fronds. West Indies and Venezuela.

H. ciliatum.—A plant of vast range yet little varied in character, whether in America—where it occurs from Mexico to Chili—in Asia, or in Africa. Though the African form is sometimes called *H. Boryanum* it is quite indistinguishable from *ciliatum*. Its prostrate roots are creeping, with fronds of 3 to 6 inches, broadly ovate, erect, twice or thrice cut, dark green in colour and clothed with tawny hairs.

the group, it is very impatient of water overhead.

H. hirsutum.—An elegant dwarf kind which creeps over sandstone rocks or the trunks of trees, covering them densely with matted roots and very narrow fronds. These are 2 to 6 inches long, drooping, deeply cut, rather limp in texture, and of pale transparent green with stalks and fronds densely hairy. In the Fern-house this kind grows well upon a block of wood, with a damp atmosphere but no water overhead. Common in the West Indies and tropical

America, extending south in hardier forms as far as Patagonia.

H. hirtellum.—A free-growing and handsome Fern with erect fronds three times deeply cut, 3 to 6 inches long and 3 inches broad, light green in colour and clothed with reddish or pale-coloured hairs which cover even the stalks as with short dense wool. Common in Jamaica and thence through other islands to Mexico.

H. interruptum.—A rare kind with fronds varying from a few inches to 3 feet in length and 2 to 5 inches wide, their general outline being narrowly spear-shaped. The upper part of the frond is more deeply cut than the lower, and all parts thickly clothed with soft yellowish hairs. *H. Sprucei* is very like a small form of this, but with fronds less hairy and much thinner in texture. Mountain forests of the Andes from Mexico to Peru, clothing tree-stems with softly drooping verdure.

H. lineare.—A handsome and delicate plant with a very wide range through the West Indies and South American mountains up to a height of 12,000 feet; it also appears upon the other side of the world in the island of Mauritius. Its thread-like hairy roots creep with limply drooping fronds of 3 to 8 inches, cut to the centre and again divided into narrow segments, their edges and surface thickly hairy. In its native country the roots cover rocks and trees with densely crowded fronds of great beauty. Syn. *H. elegans*.

H. sericeum.—A lovely and distinct kind with slender woolly roots and narrow drooping fronds of 6 inches to 2 feet long and only once cut. The leaflets are simply notched or deeply cut, and covered with silky down of silvery white while young, contrasted prettily with the long brownish hairs upon the spore-masses of older and mature fronds. It should be allowed to ramble over a porous rock, its roots clothing great masses of shady rock in tropical America and the West Indies. Like all the hairy kinds, this is most averse to having its fronds wetted.

Todea Wilkesiana.—This is a free-growing plant, beautiful and very rare, forming a slender stem that with age reaches a height of several feet and the thickness of a stout stick. The crown is composed of a dozen fronds of 2 feet long and more than a foot wide, thin

and transparent in texture and deep green marked with small brown dots. It is a miniature Tree-Fern, growing in the moist mountain forests and charming in its grace and beauty. Fiji and islands of the New Hebrides. It needs a warm place in the house, planted in peat and partly decayed sphagnum.

Trichomanes alatum.—In this **Bristle Ferns**, we have one of the finest of West Indian Filmy Ferns, very variable in size of frond and in their hairiness. Its root-stock is short and scarcely creeping, with fronds from 3 inches to nearly a foot long of remarkable transparency and pale green colour. They are broadly lanceolate, tapering to a point, deeply cut, the leaflets toothed and slightly arched. Thrives best upon a Fern stem, and is richly beautiful when its delicate tracery is hung with crystals of condensed moisture. Syn. *T. attenuatum*.

T. auriculatum.—A widely-spread species with creeping roots of such vigour as to cover wide rock surfaces and climb the loftiest trees.



TRICHOMANES AURICULATUM ON A FERN STEM.

Its fronds are 6 to 12 inches long on very short stalks, and are twice cut into broad, blunt segments of leathery texture when barren, but more finely cut when fertile; colour deep sea-green and exquisitely transparent. One of the finest Filmy Ferns that can be grown. Mountain forests throughout the East Indies, Northern Hindostan, and parts of South America.

T. Bancroftii.—A dwarf Fern with small oval fronds, deeply cut into blunt segments which overlap, and are finely waved and crisped

around the edges. They are 3 to 6 inches long, deep green, and borne upon short broadly-winged stems.

T. bipunctatum.—A Fern of creeping habit, densely clothed with black woolly hairs. Its fronds are roundly oblong and twice divided, from 3 to 6 inches long, opaque, and dark green in colour. Widely spread this kind varies much in size and appearance in different countries. East Indies, through Japan and India, to Madagascar, and Natal. Syn. *T. filicula*.

T. brachypus.—A native of the West Indies and tropical America, this species is not easy to establish. It climbs upon whatever is near at hand, with nearly stemless fronds of filmy and transparent light green. Its wide-creeping roots thrive upon rotting vegetable matter.

T. crinitum.—A tufted Fern of great beauty, distinct in its dense hairiness. Its fronds are deeply cut into notched segments, broadly oblong in shape, 6 to 8 inches long, and of greyish-green colour with thick soft hairs. West Indies and forests of the Andes.

T. crispum.—The fronds of this Fern are also tufted, 6 to 12 inches long and only 2 inches wide, beautifully crisped, and of rich deep green; they are borne upon short roots by strong wool-covered stalks and are of finely transparent texture and dainty appearance. West Indies and South America.

T. cuspidatum.—A small species with uncut fronds, waved at the edges, seldom more than an inch long, and deep green. It is a dainty little plant for a piece of Fern-stem, and will do well suspended. Mauritius. Syn. *T. Bojerii*.

T. elegans.—This Fern has often been separated from other Filmies because its fruiting fronds are so unlike the barren ones, and because the barren fronds have netted veins whilst in others of this group they are forked and free. These differences, however, though interesting to notice have not been held sufficient to justify a distinct genus, by the latest ruling. The plant is a very beautiful one with tufted deep green fronds, the sterile one 6 to 12 inches long, broadly spear-shaped and cut into narrow sickle-shaped segments which are finely toothed and often drawn out into a tail-like tip which has the power of taking root. The fertile fronds are erect, flat, and scarcely half an inch wide, with spore-masses upon the margin like a coarse hair-like fringe. West Indies and

South America from Mexico to Peru. Syn. *Feea elegans* or *Hymenostachys elegans* (see engraving, p. 363).

T. ericoides.—A kind closely allied to *T. meifolium* and equally beautiful in its erect and finely divided fronds of 3 to 9 inches long, upon smooth wiry stems, and dark green in colour. The delicate segments are turned and crisped in all directions, giving the plant a strange and very distinct appearance. Bourbon, Java, and other islands of the Pacific. Syn. *T. longisetum*.

T. javanicum.—A beautiful and singular Fern with an erect tufted crown as its root-centre. Fronds of 2 to 8 inches, harsh and leathery in texture but of beautiful transparent green colour. Indian Archipelago.

T. Kaulfussii.—A robust erect-growing kind with broad, dull green fronds from 4 to 12 inches long, ovate-lanceolate in shape, cut nearly to the stalk and covered with starry hairs. They are borne upon stout winged stems from a strong woolly rhizome. A rare plant, needing more heat than most Filmy Ferns. West Indies, Guiana, and Brazil.

T. Kraussii.—An elegant little creeping plant covering tree-stems with tiny narrow fronds of 1 to 3 inches long, widening at the middle, deeply cut, and very dark green. It forms a charming object upon a slender Tree-Fern stem, where its very transparent fronds are safe from excessive moisture. West Indies and Guiana.

T. maximum.—A charming Fern with fronds of 1 to 3 feet long and 4 to 6 inches wide; they are peculiar in being of nearly the same width throughout, a feature by which this kind is easily known. They are thrice cut and rather rigid, ovate-oblong in shape, dark green and very transparent. The plant grows freely upon wood or standstone but needs more heat than most Filmies. Java, Borneo, and Polynesia.

T. meifolium.—One of the choicest of Filmy Ferns, very rare and not easy to manage; it is erect in growth, with tufted fronds of 6 to 20 inches long, twice-cut, and the segments again finely divided and curled into a beautifully plumed appearance. For soft and delicate texture it can only be compared to the finest transparent sea-weed. Mountains of Java at elevations of 4,000 to 7,000 feet.

T. membranaceum.—A quaint and distinct plant, the stems of which are creeping and

woolly. Its fronds are 2 to 3 inches long, rounded in shape and almost without stem; from the edges inwards they are more or less deeply cut into rounded segments with incised and scaly edges; colour intense deep green. Grows freely upon sandstone. West Indies and tropical America. (See engraving, p. 363.)

T. muscoides.—A dwarf creeping plant of free growth, with simple erect fronds of bright green, 2 to 3 inches long, very transparent, and prettily waved around the margin. This kind soon covers a block of wood or sandstone with a dense green carpet. Covers a wide area in tropical America, Asia, Africa, and the islands of the Pacific. Syn. *T. erosum*.

T. pinnatum.—A curious and pretty plant with a tufted rootstock throwing erect and twice-cut fronds upon long wiry stems; the segments are from 2 to 5 inches long, the end one being often drawn out into a tail-like tip which has the power of taking root. The fronds vary in length from 6 to 18 inches, very transparent, and bright green; when fertile they are prettily fringed upon the edges with spore-masses. West Indies and tropical America. This kind does best upon a moist Fern-stem in a warm corner. Syn. *T. floribundum*.

T. pluma.—In a group remarkable for fine foliage, this kind stands in the front rank. Travellers familiar with the tropics and the beauty of this little Fern in its own home, regard it as one of the most exquisite of foliage plants. It is very rare in cultivation and is scarce even in Borneo, growing over rotting and moss-grown tree trunks with short thick roots less rambling than in most kinds. The fronds, of barely 9 inches long including the stem, are three or four times divided into thread-like segments which curl in all directions into a feathery hair-like mass as dainty as filmy seaweeds.

T. Prieurii.—A choice kind but difficult to manage; indeed, I have to regret its frequent loss. It is of erect and rigid habit with fronds broadly oval, upon long stalks, and three or four times divided. They are large, 12 to 18 inches long and 6 to 12 inches broad, of leathery texture, dark green and slightly hairy. West Indies and tropical South America. Perhaps better known-as *T. anceps*.

T. rigidum.—A widely-spread Fern, found in South America, the West Indies, East Indies,

and tropical Asia. Its root-stock is erect with broad oval fronds a foot long, twice cut into segments which are again finely divided and of intense green. It is a fine plant, so striking and distinct as to be worth a-place anywhere;



TRICHOMANES
PLUMA.



TRICHOMANES
SELLOWIANUM.

but not easy to establish. A variety, *elongatum*, bears fronds with broader segments, often overlapping and drawn out into tail-like tips.

T. scandens.—A lovely Fern with long rambling rootstocks covering large trees in its native forests. The pale green fronds, 6 to 18 inches long, are cut right to the stalk and the segments again into narrow leaflets very thin and transparent, with edges finely hairy. Jamaica and Mexico.

T. Sellowianum.—A species which pleases

even those most indifferent to plants. Its fronds vary in length and are narrowly spear-shaped and deeply cut into oblong-blunted segments, prettily waved at the edges, very transparent, and bright green in colour. Brazil.

T. sinuosum.—A beautiful kind, growing best upon a Fern-stem from which its delicate fronds drop most gracefully. The rhizomes creep forward in waves, rambling for long distances with a profusion of deep-cut fronds, 4 to 9 inches long, of lively transparent green. West Indies and Peru. Syn. *T. incisum*.

T. spicatum.—This kind is so distinct as often to have been classed apart under the name *Feea*, but in general appearance it is the same as others of this group and thrives under the same treatment. The fronds rise from a tufted rootstock and are of two sorts, the sterile ones from 3 to 6 inches long, broadly lance-shaped, and cut nearly to the midrib into notched and spreading segments of dark green; the fertile fronds are longer but narrow, spike-like, and erect, bearing two rows of hanging bell-shaped seed-masses without connecting tissues. It is a beautiful and interesting plant but not easy to grow, doing best upon wood in a warm house, with a very moist but not a stagnant atmosphere. West Indies and the warmer parts of South America. Syn. *Feea spicata*. (See engraving, p. 363.)

T. tenerum.—This delicate little species may be kept in a cool corner of the stove. Its freely creeping roots are slender and covered with wool, and its fronds lance-shaped and cut into segments which are again twice divided into narrow drooping threads of bright green, and very transparent. West Indies and tropical America. Syn. *T. angustatum*.

T. trichoideum.—This exquisite plant is plentiful in the West Indies and parts of South America, and is often treated as a stove species. I have, however, received it from the high mountains of New Granada, where it grows tall and stately, and this form of it does well in the greenhouse. Its fronds, produced upon creeping roots, are cut into delicate segments scarcely thicker than hairs, vivid green in colour, and borne on wiry, naked stalks. Covering tree trunks in its native haunts, its festoons are the most graceful and fairy-like that can be well imagined. (See engraving, p. 363.)

G.

FERNS IN THE FIJI ISLANDS.—Ferns abound everywhere, from the sea level to the highest mountain tops, in the hottest and coldest parts, in sunshine and shade, on the poorest and richest soils, and in the driest and wettest parts. They are of all sizes, from the tiny Hymenophyllum, scarcely a quarter of an inch, to the gigantic Alsophila, a tree Fern, having a trunk 50 feet or more in height, surmounted by a crown of beautiful feathery fronds. The number of distinct kinds and varieties of Ferns and allied plants native to Fiji amounts, as far as they are known, to nearly 300 species. Some of these Ferns are magnificent. The *Dicksonia moluccana* has fronds of a triangular shape, measuring 12 feet in length and 10 feet in breadth at the base. One of them would cover an area of 60 superficial feet. This gigantic leaf is supported by a stipe or stalk 6 feet in length and 3 inches in circumference. As a contrast to this may be mentioned the tiny fronds of the Filmy Ferns, Hymenophyllums, and some of the Trichomanes, scarcely one-eighth of an inch high. The delicate fronds of a new species of the last-named genus attain a height of $2\frac{1}{2}$ feet. Most beautiful they look when seen with the rain-drops hanging like beads of crystal from the points of their finely-divided fronds. Not less pretty in this respect are *Hymenophyllum javanicum* and *dilatatum*, generally found on the sides of streams, shaded from the sun by the overhanging banks and lofty trees. In the dry parts of Fiji one of the silver-leaved Ferns (*Cheilanthes farinosa*) may occasionally be found growing in the crevices of the rocks, while festoons of *Lygodium reticulatum* and tassels of *Lycopodium* to 5 feet in length hang from almost every tree, and the surface of the ground is clad with one dense mass of beautiful Selaginellas, some of which attain a height of 5 feet.

—J. HORNE.

A FINE ROMNEYA.—Mrs. Dykes, writing from the Red House, Keswick, shows what this beautiful Tree Poppy can do in the open air even as far north as Westmoreland. She says: "I have grown *Romneya Coulteri* for many years and it has made large bushes. This year it has spread into a mass 9 feet high and 27 feet round, and it had 260 buds upon it at the beginning of the summer. All these have made large fully developed flowers, and as late as the last week in October I picked two fine blooms.

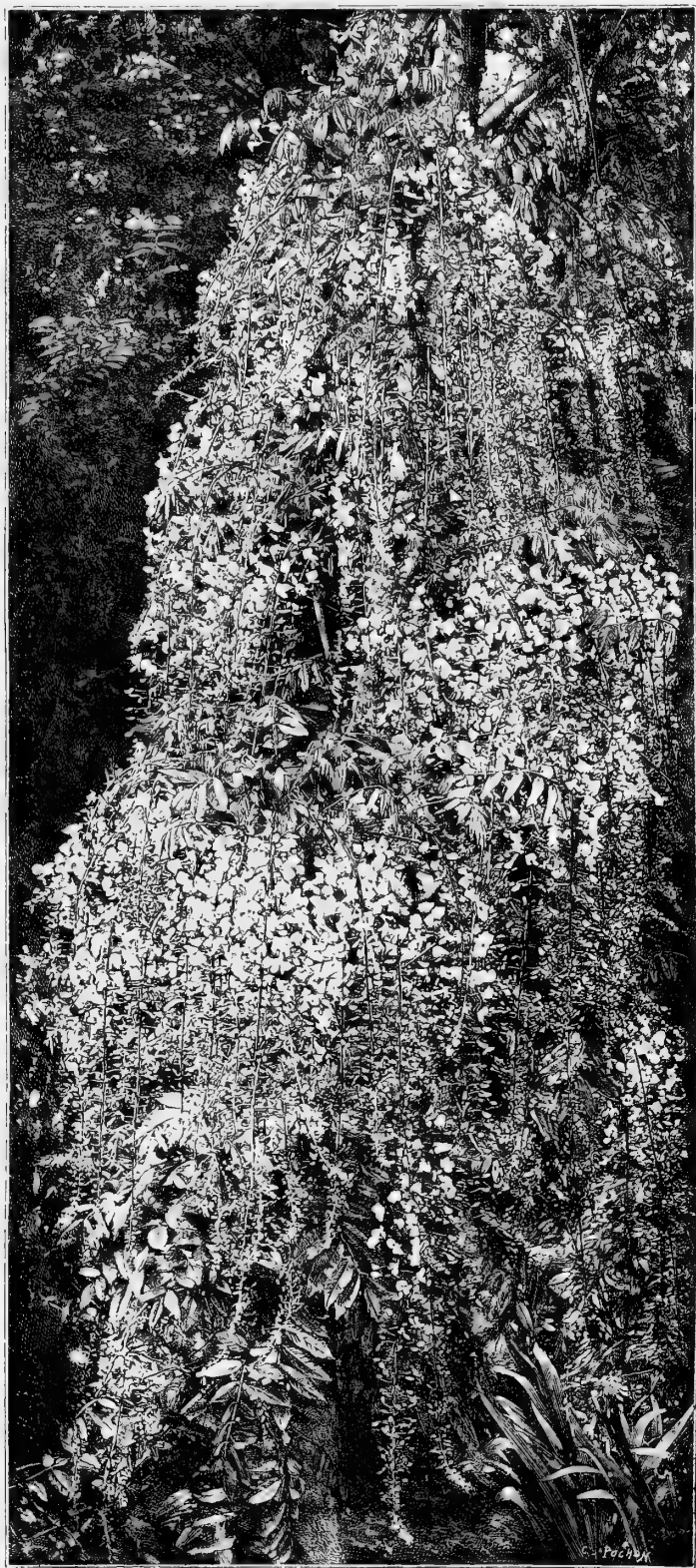
Last year there were nearly as many flowers." This plant—one of the finest of which we have ever heard—should encourage others to try the Tree Poppy in gardens farther north than is generally thought of for Californian plants.

WISTARIA.

AMONG the trees and shrubs the Far East has given to us there is none more lovely than the Wistaria—a climbing tree, massive as the giant creepers of the tropics, and enriching our gardens with sheets of colour of fine effect as spring gives place to summer. And though within the reach of everyone to-day, how rare it is to see this splendid climber used as it should be, unless it is where some old plant whose age runs into scores of years, has spread at last to a size which arrests the interest of all. We see the Wistaria planted here and there in ones and twos, and left to struggle through lean and weary years, whereas what would be easier to plan, or more enchanting when realised, than a long pergola planted from end to end with blue and white Wistarias, or airy avenues such as may be seen in southern Europe, lighted throughout by thousands of those drooping clusters, one or two plants to every tree. The great thing is to start with young plants newly layered, put in with rich soil for a start, and saved the initial years of pot starvation which is their common fate in nurseries; young roots without a tangle will do wonders in the way of rapid growth. Another point is not to plant too near the tree, when such is chosen as the "host"; a few feet further back makes little difference in effect (if so desired the stem may be laid prostrate and "layered" up to

the trunk) and it often makes years of difference in the result. Trees of almost any sort may serve, and the clustered blue bunches are never finer than when lighting up a dark-leaved Pine, tumbling in disorder over some old forest tree when past its prime, in contrast with the golden Laburnum, the white Robinia, or fine old Thorn trees, all of which flower at much the same time, or simply left to train and trail and toss amid a tangle of climbing Roses, Honeysuckle, and Clematis, with something always in flower and always beautiful. And this is but one of many uses.

Grown commonly upon walls and house-fronts, variety and length of season is gained by planting different aspects, one side succeeding another from spring to autumn, with first and second crops of flower. Trained along wires as a verdant coping to walls, or even upon iron rails (as often seen in France) the effect is good and no plant is more easily kept in place, though, as the old stems toughen, iron itself is doubled up in its embrace. A pretty way of training, common in Japan for long-bunched kinds, is upon an overhead trellis through which the flowers hang together thickly in one unbroken sheet of colour. Bowers, and arches, and covered ways—nothing comes amiss, and one old plant allowed to roam at will for seventy years or more, has clambered over walls and walks and covered ways, and tree after tree of noble stature, till it is quite a puzzle to discover where it begins and where it ends. Such freedom would not be welcome everywhere, but as a proof of what the tree can do, and in its yearly glory—for



THE "TEMPLE" WISTARIA (*W. MULTI-JUGA*) ON A TREE
IN THE GARDEN OF MR. CHAMBERS, HASLEMERE.
(Engraved for "Flora.")

such old trees flower even more freely than younger ones—that old monster is worth a pilgrimage to see. In the milder parts of Britain it is very handsome

trained as a standard, flowering later in the open than upon walls, though this way needs some care in pruning. A very pretty and uncommon way of hiding light iron fencing—ugly in itself—is training *Wistaria* over it from end to end, and as the plants meet, grafting them into one mass. This forms a solid fence and when in flower is charming in effect, and after beauty may be had from large-flowered *Clematis* planted at intervals. The long lithe shoots are very graceful trailing over rocks upon a groundwork of *Ivy*, or on the looping chains so often hung from post to post, but for uses such as these it should be borne in mind that only in our southern gardens is the *Wistaria* quite hardy, though rarely harmed to any great extent when grown on walls, while what is sometimes lost in spring by late frost is often made up in the autumn. In places too cold for good results outdoors, the *Wistaria* is one of the best of greenhouse climbers, free from insects, easy to grow, fragrant and sure in flower; the best effect may then be had by grafting blue and white together to mingle freely. Small pot-grown standards, too, are forced in gentle heat for early spring, though with some loss of colour; and as table-ornaments the blue *Wistaria* in flower is one of the prettiest of Japanese "pigmy trees." In

these and many other ways the *Wistaria* serves us well and yet may serve us better as the sense of beauty becomes better trained amongst us; while he who plants

such trees as the Wistaria rewards his children and his children's children yet more richly than himself.

As to culture, this plant needs only a fair start, in warm light soil if possible, and as much sunlight as may be had. Though often left alone, in many gardens pruning is necessary to good effect, but this must vary with the end in view. Plants growing as standards or in a small space, require close spur-pruning as for fruit trees. The best flowers grow upon short spurs coming at the base of the shoots, and to develop these all the young growths are cut well back in July, more or less closely according to circumstances and as soon as the lower wood has hardened. On starting again from the buds nearest the cut, these secondary shoots are again stopped after growing a few inches, throwing back the sap and forcing flowering spurs from the base of the shoot first shortened; in early spring the final touch consists in cutting back this flowerless wood to within a few eyes of the main stem, while reserving the short flower-spurs upon which the whole energy is thus concentrated. Standards and close-trained trees so treated will be a mass of flower in May and June, but there are no autumn flowers, which come in longer, looser bunches, only at the ends of the summer's growth. Where this second bloom is valued, and there is space to cover, pruning is only necessary to regulate and equalise the growth, with new shoots retained and laid in wherever required. When trained to trees the plant may be left alone, the one care being to prevent the spiral twist around the trunk, which is natural to the Wis-

taria but quickly fatal to young conifers or other trees of rapid growth. A good way of starting the Wistaria upon a tree is by sinking in the ground a bottomless tub of good soil, which is thus kept for its roots alone until they are strong enough to hold their own. Where old plants exist, increase is easy by layers; seedlings are not good, being slow to flower though growing fast. Root-cuttings (a plan not often followed) are said to give the best plants of all, vigorous, as well as free in flower; cuttings of the shoots will also root, with care and patience, but so slowly that this is not worth trying where other ways are possible. Though free of insect pests, the flowers are sometimes spoiled by sparrows, and I have known rats to nibble off the woolly buds by hundreds with no apparent object.

SHORT CLUSTERED WISTARIA (*Wistaria brachybotrys*).—Though known to botanists for many years this is a rare kind, represented in Europe only by small plants, and even at Kew it has not yet flowered. It is a low shrub of only a few feet, with flowers like the blue Wistaria in colour, but in short clusters of about 6 inches, which come later and are held erect or loosely spreading. The leaves are heart-shaped at the base and silky on both sides. Japan. Two colour varieties, *rosea* and *alba*, are grown in the United States, but do not seem to have reached this country. The main value of this kind seems to be for dwarf bush-plants, which are often trained in a spiral.

THE CHINESE WISTARIA (*W. chinensis*).—In its best-known form this needs no description, but there are many garden varieties, some of value, though many are yet untried in this country. The pretty white-flowered kind, *alba*, is still far from common, and though the clusters are pure white and often large, they are fewer than in the blue kind and the plant is less hardy and vigorous. It is often grafted but is best raised from root-cuttings and grown

against a sheltered wall. In Japan there are supposed hybrids with pale lavender flowers, suggesting a blend of the blue and white kinds. The fruits of the Wistaria are like a large blunt-shaped French bean, covered with soft silky down, and filled with flat, hard seeds; they are not often produced in this country. There are forms with double flowers in white and dark purple, but they open so badly in our climate as not to be worth growing, and a variety with variegated leaves has nothing to commend it. Plants often occur with flower clusters longer than in the common kind—possibly crosses with *W. multijuga*. This long-

Though less handsome than the Chinese plant it is not without value, being hardier in cold districts and blooming about a month later. The lilac-purple flowers come early in July in bunches only half the size of *chinensis*, more crowded and borne erect instead of drooping, and more strongly fragrant. The plant is of slender growth, not particular as to soil, and content with less space than the Tree-Wistaria, rarely exceeding 30 to 40 feet. As a wall-plant, or rambling over a mass of tree-stumps, its finer forms are well worth growing, and if cut at all should be pruned long. Several varieties are grown, including *alba*, with white



WISTARIA UPON A WOODEN FENCE.

flowered form of *chinensis*, known as *macrobotrys*, has flowers paler in colour and less thickly set, in graceful drooping bunches up to 2 feet in length. Of other kinds grown in the gardens of Japan, but still unknown in this country, there are forms with small leaves and thin twining stems bearing miniature clusters of white or deep purple in July and August; and another late-flowered sort with semi-double flowers of soft rosy-mauve colour, hairy buds, and distinct leaves.

THE AMERICAN WISTARIA (*W. frutescens*).—This, the only western species, is found in moist valleys of rich soil in the southern United States, and was introduced so long ago as 1724.

flowers; *purpurea*, in violet-purple; *albo-lilacina*, with flowers of pale lilac; *Backhousiana*, in a shade of violet; and *magnifica*, the best form. This is more free and vigorous than the parent, with clusters half erect, and flowers distinguished by a central blotch of pale yellow. Syn. *Wistaria speciosa*.

THE JAPANESE WISTARIA (*W. japonica*).—A plant now often classed in the allied group of *Millettia*—Old World climbers hardly separated from Wistaria by their harder seed-pods. It is a rare plant, growing at Kew as a twining shrub with pale green leaves of few leaflets and clusters of white flowers about 6 inches long, coming in July and August.

THE TEMPLE WISTARIA (*W. multijuga*).—If not the best in colour, this is the most remarkable of the Wistarias in its long flower-clusters, reaching in some cases to over 4 feet. It is not a new plant, having first come from Japan in 1874, but being shy in bloom while young it remained almost unnoticed for many years, though blooming at intervals since 1879. Beside being paler in colour the clusters are less dense, with smaller flowers set openly even from the top, where there is no "shoulder" as in the massive clusters of *chinensis*. The flowers are numerous and fragrant, opening about three weeks later than *chinensis*, and in several shades of deep and paler lilac according to the variety. The length of the clusters varies much both here and in Japan, where many kinds are grown with garden names, and long-trailed sorts are used with charming effect around their native temples and in other places of resort, to overhang water, or drooping from the eaves of country houses in curtain-like profusion. These best kinds are too much valued in Japan to be imported freely, nor is it certain they would bloom equally well in this country, but our engraving shows what this Wistaria can do in Surrey, and other good plants are now not wanting in which the measured clusters have sometimes exceeded 4 feet, with as many as 136 flowers in one cluster. Even when not in bloom *W. multijuga* may be known by its smaller and less hairy leaflets which in autumn turn a clear yellow much earlier than in other kinds. This is doubtless due to the early winter of its real home, for it is not a native of Japan but Northern China, and is hardier than the Wistarias from further south. For British gardens this is another merit, so that if less brilliant its distinct growth and graceful habit make it of real value, particularly in its finer forms. Amongst these is *alba* with white flowers, very pretty, but not always pure; *rosea*, a new kind with rosy-lilac flowers said to be a pretty pale rose while in bud; and *Russelliana*, shown last year before the Royal Horticultural Society by Mr. Russell, of Richmond, and awarded a certificate of merit. Its flowers are darker than is common, with large creamy-white blotches on the inner face of the petals. At Kew there is an unnamed variety with shorter and denser clusters. It is, however, to gardens of Japan, where the plant has been cherished for gene-

rations, that we must look for the finest forms of *Wistaria multijuga*. Syn. *W. grandiflora*.

B.

A GOOD ROCK PLANT.—[To the Editor of FLORA.] SIR,—While stopping on the Cornish coast I was very much struck with the beauty of the common "Ladies' Fingers" (*Anthyllis Vulneraria*), which grows in great profusion in the short grass on the cliffs. The common form found in many parts of England is a pretty plant, but the dwarf form from Cornwall would be more useful in cultivation and make a good plant for the rock-garden. It grows close to the ground, in some places forming the whole of the turf for a few yards. In colour the flowers vary greatly. The most striking shade is a bright crimson, a true red without any tinge of blue. Then there are varying shades of pink which pass through a pretty form, combining both pink and yellow, into a pure cream colour, and a yellow form which varies a good deal. Sometimes it is bright lemon-yellow, sometimes a fine dull yellow, and more rarely a form nearly pure white occurs. Such a beautiful plant should be more used in our gardens.—Yours truly, FRANK SAVERY.

RIDES IN BEECH WOODS.

THE oneness of effect in Beech woods calls for bold and airy rides for use in all ways, and not least, for beauty of effect. The mixed wood may give variety, but where we have nothing else and the soil allows of no other trees, some find the Beech monotonous, though with care as to the lines of rides the result is beautiful at all seasons of the year. In the making of these main rides the earth lines should be of easiest grade; they should cross the main mass of the wood, lead to fine groups, command views of the surrounding country; they should be dry and pleasant to walk upon in all weathers; in wet places have "dicks" at each side to keep the body of the ride dry; have all bad hollows filled and the surface to be of turf or fallen leaves. Eighteen feet is a good width for a ride, not less. Where a group of trees or other incident makes the ride a little wider here and there it is all the better as preventing stiffness of line. Where "dicks" are made in wet places they should be made outside the 18 feet ride. With such airy rides the tall trees that border

them find extra nourishment and as a result give better timber. There is no harm in straight lines for these rides when the ground is level: in diversified ground they should follow the lines of easiest grade, which are often also the most beautiful lines. The rides should be laid out for the ground and on the ground without any reference to plans or paper, or any adherence to a formula such as we see in many French woods, and which is against all beauty of effect.

THE STRAWBERRY TREE

(*Arbutus*).

AFTER the Holly and the Firethorn (*Crataegus pyracantha*) there is perhaps nothing more beautiful in southern gardens at this bleak season than the Strawberry Tree. This was strikingly brought home a few days ago in coming face to face with two fine shrubs in a tiny suburban garden. One was loaded with ruddy fruit, the other crowned at every tip with clusters of flower, making a cheerful display in striking contrast to the dingy Privets and Laurels on either hand. The one fault of the *Arbutus* is that it will not thrive everywhere, and for this reason it is never given a trial in many places now filled by worthless shrubs, which it might brighten at midwinter with its flowers and fruit. Given an open spot in light porous soil, this fine shrub will do well in most gardens of the south and west, not even disdaining chalk, though in sandy soil upon rock or gravel the finest growth is made. In severe winters the plant is not safe from frost when far inland, but even if cut down, the stems spring again as cheerfully as ever with the coming of warm days, and though growth in its early stages is somewhat slow, when well established its fruit and flowers may be

freely cut for winter decoration, or the plants trimmed when too large without fear of harm. The cheerful dark green leaves are handsome at all seasons and free from the insects that worry other shrubs. The clusters of Heath-like flowers, pale green or white, shaded with pink or even scarlet, hang for many weeks during midwinter and last long when cut, and the clusters of bright yellow or crimson fruit are without rival among winter berries. The rich red colour of the stems of some kinds is also fine in effect as the plants develop; even around London this is sometimes well seen. Unless pruned to a stem the *Arbutus* is apt to assume bush form, but few shrubs are more easily trained. Though fine trees 20 to 30 feet high are seen in many parts, particularly around Bath and in South Wales, the Strawberry Tree is nowhere found wild in these islands save around Killarney, where it is plentiful even to the hilltops. This fact has given rise to some discussion, but is not so strange in view of the fact that (according to geologists) the south of Ireland was at one time joined to the mainland, and that other plants, common to Spain and Western Europe are also found there. Though it creeps far up the Atlantic coast of France it is in the region of the Mediterranean that the *Arbutus* attains full beauty as a low, round-headed tree, common upon every sunny hillside of sandy soil, and resplendent in late autumn when full of flowers and fruit. The blossoms of many of these wild trees are more or less tinged with red, and the berries, larger and more fleshy than those borne further north,

are carried in profusion. The best of them (for their quality is variable) are sometimes eaten by the peasants, but are insipid and seedy; a more common use is the making of a poor wine much drunk in Corsica, or a preserve eaten as a relish with mutton. The wood of the *Arbutus* is hard and knotted, dark red within, but seldom straight enough to be of much value; not infrequently the trunk is strangely turned in spiral. Being easy to work, of good colour, and handsome when polished, it is sometimes used in turning small objects, but is oftener made into a charcoal of good quality; in the East its bark is still used for tanning.

The Strawberry Tree is easily raised from seed, which should be washed clear of the pulp, dried, and sown in pans in the following spring; the varieties are commonly increased by grafting or inarching upon the common kind. Young plants should have some protection from frost and cold winds until well established, an open sunny spot at all times to ensure well ripened shoots and perfect drainage—being impatient of stagnant moisture at the root. Beside the hardy kinds there are several tender species, but they are rarely found in other than botanical gardens. The principal species and their varieties are as follows:—

THE GRECIAN STRAWBERRY TREE (*A. Andrachne*).—This kind is rare in English gardens though perhaps the hardiest of the group, and handsome when full grown, thriving well, too, in Ireland and the West country. It is found from Greece throughout Asia Minor and the Levant, and was first brought to England so long ago as 1724. It is finer than the common kind when mature, its beauty being increased by the rich red colour of its bark, which peels off each year in thin layers. Its leaves are broader and more rounded in outline than those of *A.*

Unedo, and nearly smooth at the edges; the fruit also is more oval, but the flowers are alike save for their larger clusters, and borne from winter to early spring. There is a variety *serratifolia*, in which the flowers are yellowish, rather larger, and borne in longer clusters; the leaves, too, are dented, and narrower than in the common Grecian form.

THE CANARY ISLANDS STRAWBERRY TREE (*A. canariensis*).—This is a handsome but tender species, known as the *Madrõna* of the Canaries, and sometimes grown in English greenhouses. It bears heavy clusters of flowers, of a pale green, but not until April or May, when they are less prized. In mild districts it has been grown upon a wall, with protection in winter.

THE FREE-FLOWERED STRAWBERRY TREE (*A. densiflora*).—This is a Mexican species and rather tender. Its leaves are large, shining above, but covered beneath, as are also the angular branches, with ruddy hairs. Its white flowers appear in dense clusters giving it a fine appearance, but though an old plant in gardens it has become rare.

THE CHILIAN STRAWBERRY TREE (*A. furiens*).—A low growing kind from the far south of America, rarely growing larger than a bush. The fruit is a small brownish berry, dangerous to eat as causing delirium.

THE RED-STEMMED STRAWBERRY TREE (*A. hybrida*).—This tree was the result of a cross between the Common and Grecian kinds, and often does duty for the last in gardens, as showing the same fine ruddiness of stem. When mature it is a handsome tree, as large as its parents, equally hardy, and finer in flower. A beautiful specimen may be seen in the park at Bath, nearly 30 feet high and well proportioned, flowering profusely every autumn and throughout much of the winter. The flower-clusters are short, rather rounded, and larger than those of *Unedo*, as are also the leaves. There are several garden forms of this handsome tree to which names have been given, but their differences are slight.

MENZIES' STRAWBERRY TREE (*A. Menziesii*).—A large robust tree of the north-west of America, from British Columbia to southern California, including Vancouver Island, where it is very abundant. Old trees reach a height of more than 60 feet with a trunk stout in pro-

portion. It bears oval glistening leaves upon long stalks, large, smooth at the edge, and glaucous beneath; the branches are covered with a rich reddish bark (in some trees whitish) which peels off annually in long strips, and from its colour the tree is often known as the Mountain Mahogany. The sweet scented flowers, of dull white, appear in autumn and are almost globular, with the mouth very narrow and contracted; the berries are larger than in the European forms, rather flatter, and of a bright orange-yellow. It is one of the largest of the group, forming a close compact head when young, which it retains as a regular umbrella shape in quite old trees. Like the eastern species, it is a tree of the sunshine, thriving in dry stony soils, and taking entire possession of such spots as it favours. Though in its native haunts it stands severe cold, it is somewhat tender in this country, though here and there, as at Kew, fine plants may be seen growing with no special care; our damp autumn is, however, against the ripening of its growth. In coast gardens of suitable soil this beautiful tree is worth a trial. Syn. *A. procera*.

MILLER'S STRAWBERRY TREE (*A. Milleri*).—This is a distinct garden seedling raised in Bristol. A vigorous plant, with large leaves, and flowers of a delicate pink.

THE HOARY STRAWBERRY TREE (*A. mollis*).—A tender Mexican plant with rosy flowers appearing in late spring, and downy leaves of velvet whiteness beneath.

THE GREAT STRAWBERRY TREE (*A. petio-*

laris).—A robust tree of the mountains of Mexico, unknown in English gardens, and probably tender in this country.

THE HAIRY STRAWBERRY TREE (*A. tomentosa*).—A beautiful and uncommon plant, found along the western coast line of North America, hardy in warm districts, and very handsome in its dense foliage. The whole plant is covered with short reddish down, sometimes whitish beneath the leaves, and bears a profusion of pure white flowers from December to March. It is worth growing under glass for its wealth of flower, but makes a beautiful wall shrub in any mild district.



ARBUTUS UNEDO (CROOM'S VARIETY).

THE COMMON STRAWBERRY TREE (*A. Unedo*).—The common form of Europe and the south of Ireland, grown in gardens under many varieties, some of which are handsome and others showing only minute variations in leaf or habit. Amongst its forms are the Myrtle-leaved, Willow-leaved, and Oak-leaved forms

—the last with a wavy outline; a fourth with crimped leaves (*crispa*); a low-growing smooth-leaved variety (*integrifolia*); and a kind with very large glossy leaves (*photiniæfolia*). The finest, however, is that known as *Croomii* (syn. *rubra*) with leaves finer than its parent, bearing larger honey-scented flowers prettily shaded with crimson, followed by deeply-coloured fruit. The shade of the flowers varies from salmon-pink to deep red in the form *coccinea*, and with its handsome foliage and rich red bark it is one of the finest of hardy shrubs. There is also a double-flowered form, but as it sets no fruit it is of little value for gardens.

THE MEXICAN STRAWBERRY TREE (*A. xalapensis*).—A tender species from Mexico and New Grenada, of no great interest for English gardens. B.

LÆLIO-CATTLEYA REX.*

THE crossing of *Lælias* and *Cattleyas* has yielded many handsome forms of what are termed *Lælio-cattleyas*, and among these seedlings the crossing of the forms of *Lælio purpurata* with the many varieties of *Cattleya Mossiæ* has given a series of fine hybrid Orchids. It was during 1885 that the first of these hybrids flowered, though at the time its origin was unknown and the plant described in Veitch's "Manual of Orchidaceous Plants" as an "*enfant trouvé*." It was named *Lælio Canhamiana*, in honour of Charles Canham, then Orchid foreman at Messrs. Veitch's nursery, where the plant was raised. This first plant of the series produced flowers so different from those so finely shown in the plate, that were it not for the many intermediate forms that have appeared since 1885, it would be hard to imagine that there was any connection between them. In *Lælio Canhamiana* the sepals and petals are light rose, the lip dark

velvet-purple in its outer waved portion, margined narrowly with white in its upper part, and veined in the throat with brown stripes on an orange ground. Many fine varieties of this plant have since been raised, some with white segments as in *L.-cs. Canhamiana albida*, and "*Marguerite*"; some with very dark flowers, as in *L.-cs. C. superba*, and "*Joyce Wigan*"; and the beautiful and distinct form named in compliment to Lady Wigan. But amongst them all, few approach this new plant in the purity, size, and substance of its flowers, and the rich colour of the lip. Its full name is *Lælio-cattleya Canhamiana* var. *Rex*, for though not derived from the original forms, its parents are two distinct varieties of those forms, and by common consent in such cases all allied offspring are classed together.

The parents of this fine plant are given as *Lælio purpurata* var. *alba*, crossed with *Cattleya Mossiæ* var. *Reineckiana*. The ivory whiteness of its sepals and petals comes from the white outer segments present in both parents, whilst the fine magenta-purple colour so predominant in their lip-petals is seen in yet more marked degree in the lip of the hybrid. To Messrs. Sander of St. Albans is due the honour of having raised this grand Orchid, of which I well remember seeing the first flower when visiting the nursery in May 1902. Since then plants have come under my care in the "Clare Lawn" collection, and I have had full opportunity of proving its merit. Like many other home-raised Orchids it is far less difficult to grow than im-

* With coloured plate from a drawing by H. G. Moon at Messrs. Sander's nursery, St. Albans.



ported Cattleyas, though in the main their needs are identical. Potted in the leaf-mould mixture now so generally advocated, the plants should be placed in a warm part of the Cattleya-house; if carefully watered whilst growing, and given a decided rest when growth has ceased, there need be little fear of failure.

East Sheen.

W. H. YOUNG.

THE FRUITING QUINCES.

WE would speak of the Quinces for their beauty of flower as well as for their fruit. There are two points all in favour of this tree, one being its fondness for damp soils unsuited to most other fruit trees, while from its late season of bloom it is far less exposed to injury from spring frosts than most of our orchard trees. Join to this its few wants, easy culture, and freedom from pests, and it seems strange that the Quince should ever have sunk to its present place in the waste corners of our fruit gardens. The present demand for the Quince altogether outruns the supply, while to many it is an unknown fruit. Within recent years Quince culture has been taken up in the United States with characteristic thoroughness, and though the plantations are not yet in full bearing, a good return is secured, local demand is fast increasing, and an average yield of over 400 full-sized Quinces to each tree shows what can be done by careful culture. There is a large area in the south of England and Ireland in which Quince culture might be made a profitable industry, equally fine samples of fruit coming from Kent and Sussex, and the gardens of Gloucester and South Wales.

Messrs. Longley, of Rye, the manufacturers of Quince marmalade, often have difficulty in finding fruit, and this is but one of the uses of the Quince.

The tree will do well in almost any soil which is not too compact or too sandy, and not overcharged with lime. Cool bottom-land and the fringes of ponds and watercourses suit it admirably, and even wet ground liable to flooding is not against it if the soil is fairly porous. In dry soils the growth is weaker, and the fruit smaller and strong in flavour, but with care in watering fair crops may be gathered even upon light land. The growth of the Quince is slow, tortuous, and apt to straggle, but plants of several years old may be moved without risk if allowed a year of rest before fruiting. Being a shallow rooter with masses of fibrous roots near the surface, there must be no deep digging, a dressing of manure in autumn, a slight mulch in summer, and light hoeing to keep down weed, being all that is required in this way. The blossoms come upon side shoots which push five or six leaves before the flower appears—mostly in early June when the worst frosts are over. Though its lateness in bloom is a gain in spring the lateness of its fruits in autumn requires in our country a sunny and sheltered situation if the crop is to mature upon the trees and the season's growth be ripened. Upon trees left to themselves heavy and lighter crops are generally borne in succeeding years; the aim of good cultivation is to equalise the yield by thinning when above the average. It pays also to feed a full crop with liquid manures, the gain of size and

quality in the fruit being great, especially in a dry season. They are seldom mature until late in October and should hang until mellowed unless sharp frost threatens; being easily bruised, they should be handled with care and laid to ripen fully in a cool and airy room, becoming bright yellow and very fragrant when fit for use. Often 1 lb. or more in weight, the fruits of some kinds reach as much as $2\frac{1}{2}$ lbs., but this is exceptional. Quite small trees will yield half a bushel of fruits, and with age the yield increases rapidly. The trees are best planted in November, and while old trees move fairly well young ones are better; towards the north the tree is best upon walls, seldom ripening its fruit without this protection. The immediate neighbourhood of the sea is unfavourable to the Quince. The general way is to leave the tree unpruned, but however picturesque in appearance this is against good fruiting. Being often scanty in leaf little thinning is needed beyond that of weak cross-shoots; when the head is once formed each season's growth should be pruned back to five or six buds, and though this may seem severe the increased yield justifies the plan when market is the end in view. The trees are seldom more than 15 to 20 feet high and are many years in reaching that height, being more inclined to spread and droop earthwards than to rise; good erect shoots should, however, be encouraged as being the most fruitful.

The Quince may be raised by seeds, cuttings, layers, budding, or root grafting, and, as is so often the case, the worst method (from layers) is that most used.

It is so easy to cut back an old tree and force shoots from its base which quickly root when earthed up, but trees so raised are always throwing suckers in the same way. Cuttings of the ripened shoots a foot long, taken in early autumn, will root as readily as Rose cuttings in warm light soil under just similar conditions. Root grafting—a good way—consists in splicing pieces of apple root to short cuttings; this assures their rooting, and when well rooted on its own account the apple-root can be removed at the first transplanting. So much care is needed, however, to grow a good standard Quince, that the best way is to buy young trees for planting. For light and dry soils the Quince is often grafted upon the Hawthorn, but for heavy soils seedling Quinces make the best stocks.

*Beauty of
Form.*

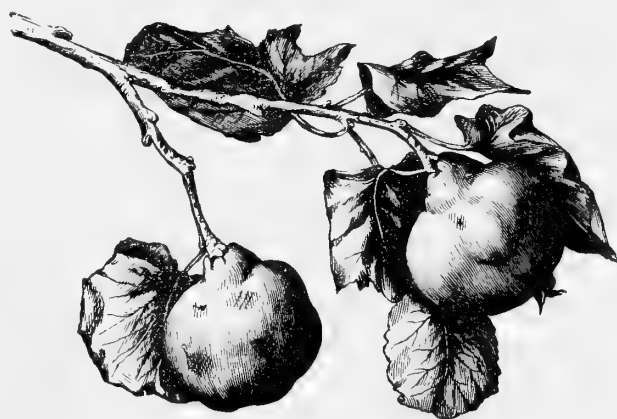
Apart from its fruit, the beauty of an old Quince tree makes it worth a place in any garden, with its sweeping pendulous branches, knotted and gnarled grotesquely, distinct in their dark colour, and quite unlike the ordinary fruit tree in effect. The large cup-shaped flowers of white or flesh-pink are beautiful, hanging like single Roses from the tips of every side shoot among the soft rounded leaves, silvery white beneath. And when in autumn the boughs hang yet lower beneath their load of fruits, whose colour outvies the golden leaves, few trees grown for effect are finer than this “golden apple of Hesperides.” Many an old pond in Kent and Sussex is fringed every autumn with its loaded Quinces, and when bending low over the water with its fragrant burden, the

charm and fitness of this tree for the waterside is well displayed. The beauty of the old Quince orchards of southern Europe, where the fruits hang until fully mellowed, explains the estimation in which it was held by classic writers for whom the Quince stood as an emblem of love and happiness, dedicated to Venus and used in the adornment of her temples. Its fruits were fabled as the forbidden fruit of scripture, were worshipped by the Greeks, and for ages played a part in marriage rites, a custom maintained in our own country as late as 1725. Travellers tell of Chinese Quinces which are tender and delicious eaten raw, but the Quince of Europe is not good until cooked. For ages Quince jelly and marmalade have been famed, and were long the only kinds known. The fruits are far richer in flavour than most cooking Pears, stewed in the same way and served hot with sugar, and cream or butter, or when cold if so preferred; again, for an added zest to Apple tarts the Quince is most useful in countries like our own, where the Apple is the great winter fruit. Even when the ripe fruits (which do not keep long) are gone, a reserve of syrup will supply their flavour. In America increasing quantities are tinned and bottled, while in southern Europe Quince pulp is made into a wholesome sweetmeat called "*cotognata*." The pulp, boiled with sugar or honey till in a thick paste, is rolled into layers and slowly dried; this is not only a delicious confection but is useful as a mild remedy for bilious troubles.

Kinds.

The Quince is known botanically as *Cydonia vulgaris*

from its abundance at Cydon in Crete; in many parts of southern Europe it is common, especially upon the rocky shores of the Danube. As with many cultivated trees its original home is unknown, though believed to have been northern Persia; it has long been naturalised throughout the Mediterranean region and is an old tree in Britain, spoken of as plentiful and much esteemed as early as 1573. The neglect into which the tree has fallen explains why few sorts are grown, and even these are perhaps less good than formerly through poor cultivation. The increased attention given to this tree of recent years has already shown itself in new kinds, while the presence of *Pyrus* (*Cydonia*) *Maulei*—a Japanese Quince with good fruits—and the possible introduction of Chinese fruiting varieties, might by crossing yield important improvements as to flavour and food value. There are three principal kinds grown known as the Apple-shaped, Pear-shaped, and



PEAR-SHAPED QUINCE.

Portugal Quinces, and in addition an increasing number of local-named varieties from different parts.

THE APPLE QUINCE (*Cydonia vulgaris maliformis*).—A variety with full

round-shaped fruits, borne very freely and of good flavour, but spoiling quickly.

THE PEAR-SHAPED QUINCE (*C. v. pyramiformis*).—The kind most often seen in this country, very hardy, and of quaintly beautiful outline. Though a heavy cropper its fruits are lacking in flavour and juice, becoming almost woody upon poor soils and when neglected; on the other hand, they keep longer than other kinds, having a tough downy skin.

THE PORTUGAL QUINCE (*C. v. lusitanica*).—This forms a tall and handsome tree, but being less hardy needs a warm spot. Nor is it such a sure cropper, though its fruits are larger, of refined flavour, and better in quality than the first two kinds; they turn a rich red when cooked—a pretty colour in preserves. Of more vigorous growth and fuller leaf, it makes a good lawn tree for sheltered gardens, worth growing if only for its large pale-pink flowers in early June.

Named Kinds. The old *Orange Quince*, a round-shaped fruit of deep colour—was long the standard American kind, but has now largely given place to *Rea's Mammoth*, an improved variety with larger fruits of tender flesh, free from the hardness and harshness of the old Pear Quince. A newer kind, *Champion*, is also widely grown in the States and is now to be had in this country. It begins to bear very early and its fruits come a fortnight later than the *Orange*—a useful succession where the winter is not too early. They are apple-shaped, bright yellow, of good quality and rich colour, while 18 ozs. is no uncommon weight. Another good late kind much grown for the American market is

Meech's Prolific. Two new American varieties as yet untried in this country are the *Fuller Quince*, with large pale yellow fruits of soft flesh and fine flavour; and *Van Deman*, a seedling from the Portugal Quince, with handsome fruits of great size and good quality. A variety thought well of in France is *De Bourgeaut*, a very vigorous tree with large rounded fruits of golden yellow. Nor are the new sorts confined to America, for several kinds of local reputation have been found in Southern Europe and are being distributed by one of the great German nurseries. Such is the *Lescovez Quince* (from the town of that name, where it has been grown for generations), an apple-shaped fruit of immense size and refined flavour, distinct from any other kind, and said to be the best of all for marmalade, yielding a clear jelly of rich colour. The tree is of rather weak habit, with small and very dark green leaves. Another new kind from the Balkans is the *Bereczki Quince* (also known as the *Vranja*, its native place), a tree of robust growth with large leaves, very free even from a small size in its large golden fruits differing from other kinds in their clear shining skin. Their flesh is soft, juicy, and of good flavour, but the jelly is inferior to that of the last in clearness and colour. The Quince *De Baden* bears large pear-shaped fruits; *Monstrueux de Bazine*, fruits of the same shape but nearly 2 lbs. in weight and excellent for preserves; while the *Zucker* or "Sugar Quince" is a smaller kind from Asia, very sweet and good for stewing. Other sorts offered by continental growers are the Muskat Quince,

the Persian Quince, the Constantinople Quince, and the *Anger*; this comes freely from seed and is that most used for grafting Pears. So few of these named kinds have been tried in Britain that it is too soon to speak with certainty of their value, until growers have given them a trial in this country.

**Other Fruiting
Species.**

Besides these fruiting Quinces a few of the kinds grown wholly for their flowers yield fruits of some value when cooked. Maule's Quince (*Pyrus Maulei*), a beautiful little shrub with scarlet flowers from the mountains of Japan, bears bright yellow fruits flushed with red, of the size of small Pippins, very



JAPANESE QUINCE.

fragrant, and of agreeable acid flavour. If preserved when fully ripe these are excellent in tarts or as jelly. A scarce seedling form of the Japanese Quince, known as the citron-fruited or *Cydonia citripomma*, also yields fruits which may be preserved. They are oblong in shape, of the size of a hen's egg, very fragrant, and orange-red in colour when mature. Though worthless while raw, they give

a jelly of good colour and pleasantly acid in flavour. A form of the Chinese Quince (*Cydonia chinensis*) grown in the south of Europe, bears very large oblong fruits, but they are worthless even when cooked. B.

TREES AND SOIL.

IN the wood there can be no question of artificial manures or of cultivation in the agricultural sense of the word; by what means, then, does the soil of a forest maintain its fertility, and even improve its condition? This is brought about by the action of the surface covering immediately above the natural soil. This may be either *living covert*, composed of plants too small to rank as brushwood, and *dead covert*, formed of the *débris* of vegetable matter—leaves, needles, dead branches and twigs, shreds of bark, berries, excretions, and decaying matter generally. According to Professor Henry, the weight of dead covert falling each November in woods twenty years old in the district of Nancy, varies with the soil from $2\frac{1}{2}$ to $3\frac{1}{2}$ tons to the acre, and in the Beech forests of the same district it is double this weight. Professor Ebermayer sums up the action of this dead covert as follows:—Being spongy, it freely draws air and moisture into its network of channels, the amount of water absorbed being two and a half times its own weight. It protects the soil from evaporation and the hardening due to beating rain, and at the same time provides a natural system of drainage which prevents the surface soil from being carried away, and conveys the moisture to the subsoil where it is wanted.

**Leaf-soil and
Peat.**

Under the influence of natural ferments the elements of the decayed covert are slowly dissolved into a powdery substance of dark colour, often black, and with a peculiar odour: this is humus, or leaf-mould. It is of the utmost value, and we may here consider its special properties in view of the large part that it plays in forest soils. Leaf-mould absorbs and retains far more moisture than other soils, and while always cool it is never wet, thanks to its porous nature. It acts also as a wonderful equaliser of soils, resembling clay, in that it will bind the most powdery sands, but so free from the stiffness

of clay that soils too compact are by it made friable and easily worked. It minimises the effect of heat and cold, and combats the hurtful properties of certain mineral substances. It is the principal agency in a natural process of mellowing which, in its results, is best comparable to that of cultivation. It has recently been shown by a Danish professor, Dr. Müller, that myriads of organisms exist in forest humus—plant-eaters and flesh-eaters—which pierce galleries and transform it into a living mass of creatures, struggling one against the other for existence. Very soon, in their quest of food, animals of a higher order such as shrews, moles, and wild boars, complete the blend of soil, sub-soil, and leaf-mould, as thoroughly as if it had been done with the spade or the plough, and to this mechanical process the trees also contribute by their root-action.

But the question arises, if the leaves return to the soil only what they took from it, how, if at all, is there returned the valuable materials lost at each forest thinning, and which—spite of their comparative unimportance it may be—represent a dead loss to the soil? This renewal is brought about by a “mobilisation,” if we may so call it, of reserves latent in the soil, by processes which we shall explain. The first question is: Whence comes the deficient nitrogen? because, even if the phosphates and the potash remain imprisoned in the soil so long as plant life is not there to draw upon them, it is certain that the nitrates are easily drained away with the surface water. It is admitted that the nitrous elements dissolved in rain, snow, and dew, during their passage down the roots of great trees furnish to these larger quantities of nitrogen than can be the case with agricultural crops which penetrate only a thin layer of soil. Yet even these larger quantities of nitrogen are insufficient to maintain the balance of demand and supply. The result of Professor Henry’s research is to show that this deficiency is made up by the covert, dead leaves having the faculty of absorbing nitrogen from the air as plants of the Pea tribe often do in agriculture. It has been proved that the gain in nitrogen from this source may amount to 17 lbs. to the acre in the case of Oak leaves, and 26 lbs. in the case of Hornbeam. Certain leaves like those of the Beech and Pine, being hard and tough, are very slow to decay, whilst those

of the Hornbeam, Elm, and Ash, which when green are eagerly eaten by stock, are as greedily devoured by the plant-eaters in the soil when dry. On the other hand, in the presence of excessive moisture the action of oxygen and of heat is much lessened, and the decomposition of such *débris* is slow and imperfect. Acid combinations are also freely produced, resulting in a dry residuum resembling peat, in which only the Alder, Birch, Aspen, and Mountain Pine among the greater forest trees are able to thrive. Inversely, where there is excessive drought the soil becomes parched, crumbling, and fibrous, wearing gradually into a brown or black powder which is not at all easily decomposed, and is a veritable dry peat with all its drawbacks. It is chiefly found in sandy soils, where it goes to form what is known as “peat soil.” Dr. Müller tells how to distinguish the various sorts of humus. In leaf-mould, where carbonic acid is the only acid so to speak, animal life abounds and worms are common, it is constantly turned by moles and wild boars, and among the plants native to it are the Woodruff, the Dog Mercury, the Oxalis, and the Wood Anemone. Peat, on the other hand, is a sort of felt, held together by the tangle of surface roots and by a fungus peculiar to the soil. Sometimes it may be dry and powdery, at others porous as a sponge and as readily absorbent, but it is always rich in organic acids and supports a low vegetation, and Mosses, which, apart from a few forms of *Polytric*, are not to be found at all in humus. The fauna of the peat forest, beside being less varied, is marked by the absence of moles and worms, and deprived of their agency has to depend upon chemical means of decomposition.

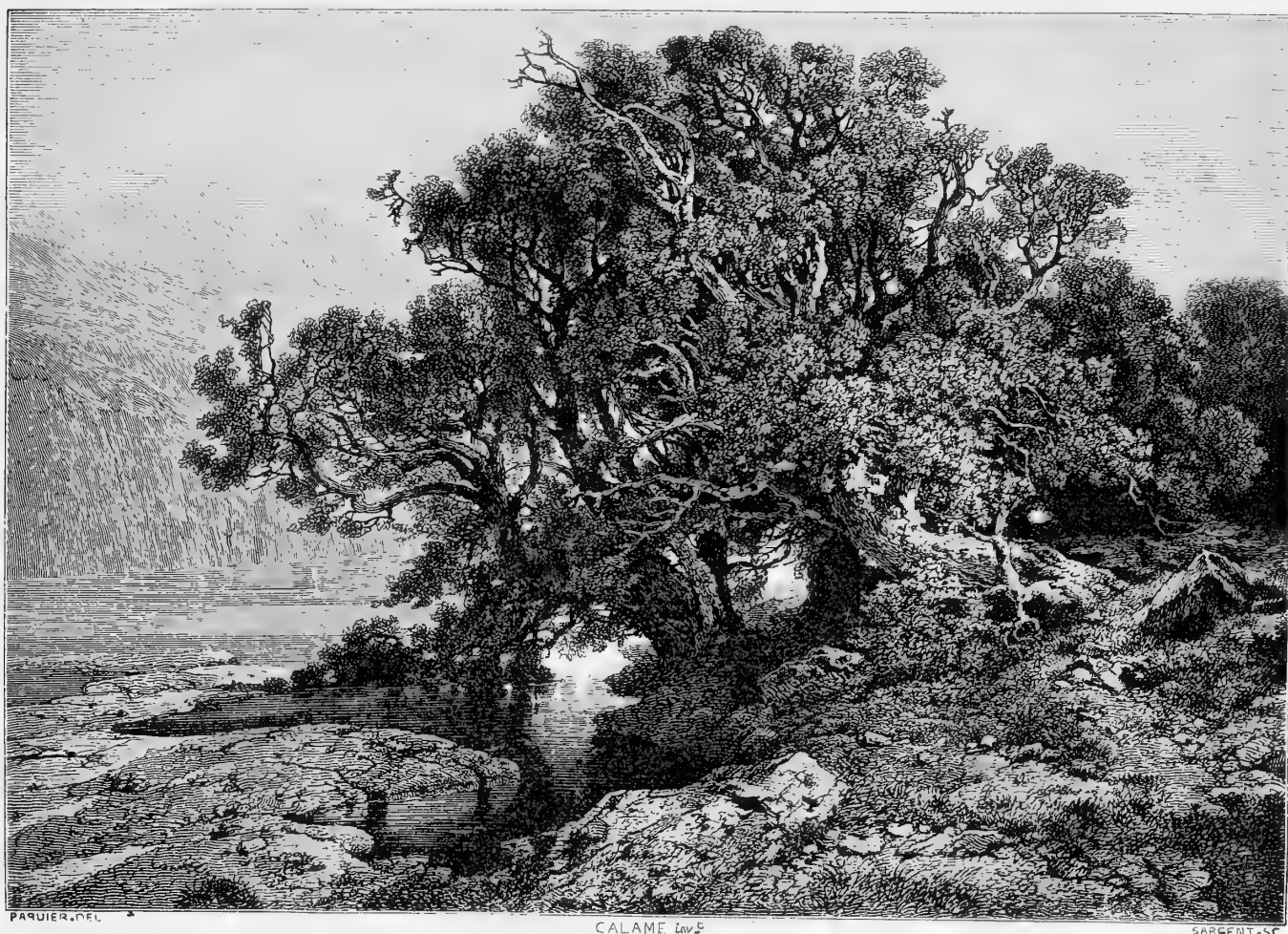
Peat soils prevail in the cold and foggy regions of northern Europe; further south, where the growing season is long and lime soils abound, it is much less common. Dry peat is, however, often met with in sandy forests, and moist peat upon the mountains. By filling up the gaps in woods, preserving the undergrowths, and avoiding too frequent thinning, forest culture aids the formation of dry covert; its removal is so injurious to the wood that it means a loss of 50 per cent. or more in output. In soils composed of leaf-mould long rotations are better than short, in order to expose the soil as little as possible; it is important also

to preserve the brushwood and the outer trees upon all sides, for these hold the woods together and give shelter from sun and wind. In coarse, dry, and hot sands, low and continuous covert should be maintained, and every effort made to encourage trees of dense leaf such as are generally shy of dry soils. To this end trees of different ages are better than a uniform age.

Living Covert. This varies with the nature of the soil, and is always a sign of neglect, since it absorbs to its own profit

LANDSCAPE AND WOODLAND PICTURES BY THE MASTER PAINTERS.

No landscape painter ever interpreted the true character of the picturesque more happily than the Swiss painter Calame. He commenced his career by colouring little prints of Swiss scenery for a mere pittance, but, through his painstaking work he gradually acquired



LAKE SCENE IN SWITZERLAND BY CALAME.

reserves of nourishment in the soil and is a hindrance to natural renewal. Even when young seedlings gain a footing in spite of it, they are weak through having to compete with other plants. Even such covert is better than none, for it holds the soil together and protects it from being wasted by rains or parched by heat, and yields elements to the soil from which the trees can profit.—*Les Forêts.*

such mastery of form and colour as to attempt original subjects, becoming, after many disappointments and some failures, one of the greatest landscape painters of his time. He has left many paintings, and amongst the finest of them—mostly painted towards the close of his life—is “Monte Rosa after Sunset,”

in which the highest peaks of dazzling white are touched with rosy glow when all else in the picture is bathed in shadow; this masterpiece forms part of the collection at Neuchatel. His best work deals with the scenery of the higher Alps, treated in a way peculiarly his own and well shown in his "Region of the High Alps after a Storm," "The Lake of the Four Cantons," "Mont Blanc," "An Avalanche of Rocks," and many other pictures. Though comparatively young at his death, Calame lived to reap the reward of his industry and talent, his house at Geneva being the common ground of all the great men of Europe of his own time; he died in 1864, when in his fifty-fourth year. Our engraving, from one of his works in black and white, exhibits skill to which few have attained; it represents a group of Oaks growing upon the margin of one of the smaller Swiss lakes. The life-like rendering of the gnarled branches is admirable in its boldness, as is also the contrast of the water-worn rocks stretching out to some distance in the shallows of the lake.

CALCEOLARIAS AS FLOWERING SHRUBS.—The article on Calceolarias in FLORA AND SYLVA leads me to send you two photographs of *C. integrifolia* in South Devon. Here it may be considered one of our best flowering shrubs. I have never met with it in such quantity as at Kingswear and its immediate vicinity; other places in which I have seen it have had connection with Kingswear, so that it was probably obtained from there in the first instance. I sent it up to Kew and found that I was right in my surmise that it was *C. integrifolia*. They wrote me that they did not possess it so I sent them cuttings. In the photograph of the larger plants these are growing by a gravel path and are over 5 feet in height. One plant here was 6 feet high and 7 feet through, but has since

been cut back. They are at their best in July, but continue to flower through the autumn, shrubs in my garden being now (end of October) full of bloom. The flowers here are not lemon-yellow as stated in the article, but bright golden-yellow. It will grow and flower anywhere, as shown by the second photograph, which represents a row of plants growing in stoney soil at the top of a retaining wall with a line of Laurustinus planted immediately behind. *Mesembryanthemum edule* is also planted among the Calceolarias. The soil is naturally very poor, and the roots of the Laurustinus and Mesembryanthemums must rob it of that little nourishment it possesses, while in hot summers the place becomes absolutely dust-dry, yet the Calceolarias never fail to flower though they make but little growth and their lower leaves are brown. This Calceolaria is never injured by the winter, and I daresay if grown in rich soil and well manured periodically would attain a height of 7 or 8 feet, but it is so common and submits so uncomplainingly to neglect that no care is ever taken of it. *C. Burbidgei* also has grown here in the open for two years but does not flower freely, and can in no way compare with *C. integrifolia* for effect.—WYNDHAM FITZHERBERT.

SONGS OF THE WOODS AND FLOWERS: AN OCTOBER ALLEGRO.

We are yellow autumn leaves, decked with russet and
with red,
Pranked in gold and in the proudest of attire;
But the wild October breeze hath lured us from the trees
And hath piped to us to dance to his desire.
Such a tone he now hath blown, full of revelry and glee,
Like the fluting of the orioles in May,
That we yield us to the course of his dominating force
And come drifting down his mandate to obey.
We refuse to borrow sorrow from the morrow ere 'tis here
For the music of the day doth make us mad;
And the fate of leaf or man must befall as best it can
When the wind doth will to wanton and be glad.
What intoxicating pleasures are the measures of our
dance
When a thousand of us rise as in a cloud;
Or when, as from a sleep, we awake in sudden sweep
And around do reel a swiftly eddying crowd.
How we twirl in merry swirl as aslant the wind we whirl
To seem to shun his rapturous embrace;
Till he lifts us in his might to the glory of the height,
Where the swallows dip and swing in airy chase.
And as Jove wooed Danaë in the fabled days of old,
When the gods, for love, did stoop to visit earth,
So in showers of splendid gold hath the wind his passion
told,
With the promise of the springtime's joyous birth.
W. D. ELLWANGER.

INSTRUCTIONS AS TO BINDING.

The two coloured plates facing pages 264 and 376 should be transposed: that of *LÆLIO-CATTLEYA* EMPRESS OF RUSSIA to face page 264, and *LÆLIO-CATTLEYA* REX to face page 376.

I N D E X.

[NOTE.—References to Coloured Plates are in CAPITALS, to Wood Engravings in *Italics*.]

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